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THE MADRAS

QUARTERLY JOURNAL

OF

MEDICAL SCIENCE.

EDITED BY

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2. Regional Anatomy: containing a description of the most important regions of the human body; with the relative Anatomy of the parts contained therein, designed as a guide in the performance of the principal operations in Surgery. By M. W. Hilles. 32mo. 1857.
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It is particularly requested that intending Contributors to the Journal will observe the following simple rules in furnishing M.S. for publication.

(1) Write on pieces of paper one quarter of a sheet of foolscap, in size.
(2) Write only on one page of each sheet.
(3) Write clearly without regarding appearance, but making every word distinct, punctuation to be carefully attended to, and proper names of places or persons to be written very legibly.
(4) For words or sentences in large Capitals, underline three times.
" " " Small " " twice.
" " " Italics " " once.
(5) Number each sheet at the top consecutively thus : (1,) (2,) and so on.
(6) Essays, Reports, &c., should be arranged for publication in the same forms as are adopted in this Number.
(7) Sentences should be groupedin paragraphs of suitable lengths as whole pages of unbroken type are not sightly.
(8) Where Illustrations are sent they should be as accurately drawn as possible, as correction of errors in drawing is difficult and may materially alter the general appearance of the Illustration.

In order to insure immediate publication, communications should reach the Editors at least *two months* before the appearance of the Journal for which they are intended, and, it may sometimes not be possible to insert all communications received, in the following Number.

All communications received will be acknowledged privately. Any deemed unsuitable will be returned to the Authors with as little delay as possible.

Some apology is due to our Subscribers for the delay which has occurred in the issue of the present number of the journal. It has been unavoidable, owing to the intervention of the Christmas Holidays, during which the Printers were not at work.—Editors.

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EARLY in January 1857, the B Company, Madras Sappers, received orders to hold themselves in readiness to proceed on Field Service to Persia.

On the 1st February the steam-ship "Scindia" arrived in the Port of Cocanada, from Bombay, for the purpose of conveying the company to the seat of war. The Madras Sappers were indebted to Lieutenant-General Sir J. Outram, G.C.B., for this honor.

The company—strength 161, including followers—embarked the same day under the command of Lieut., now Major P. A. Brown, 1st Madras Fusiliers. Doing duty with the Company were Lieut. F. R. Fox and the present Medical Officer. The Engineer Officers were Brevet Major Boileau Lieut. H. H. D. Prendergast, and Lieut. H. J. G. Gordon

After being nine days at sea we arrived at Bombay, and were transferred to the Honorable Company's steam-ship "Victoria," in which we proceeded to the Persian Gulf, via Kurrachee, in Sind. We anchored in Kurrachee harbour on the 25th February. Here we were detained for about nine days for the purpose of taking in tow a transport conveying "Belooch" Cavalry to Persia, and of affording protection to several river-flats destined to assist in the operations against the enemy upon the "Karoon" river and other waters inaccessible to vessels of greater draught.

It was not considered advisable for the men to remain, inoperative as they were, upon the vessel, and, therefore, during the nine days detention in this harbour, they were permitted to go on shore, and they encamped in an arid, low, situation near the water, and but a short distance from a large miasmatous swamp, through which the road from the Port to the cantonment runs. Even this site was preferable to an inactive detention on board-ship, where the men were packed closely together and unable to take exercise.

The temperature of Kurrachee was manifestly milder than that of Madras: the mornings and evenings were always cold. During our temporary sojourn here the men generally enjoyed good health.

From this Port we again sailed on 6th March, in company with Brigadier General Jacob and his "Sind-Horse."

After running along the northern shore of the Persian Gulf for *seven* days, we cast anchor in the roads of "Abooshuhur," Bushire, where numerous men-of-war and transports were riding at anchor. We did not leave the vessel, as General Outram was embarking a division of the Army, then encamped near Bushire, for the purpose of operating against a considerable force of Persians, commanded in person by the Shahzada, occupying an important position near the town of Mahumrah on the "Shat-ul-Arab"—the mighty stream formed by the confluence of the rivers Euphrates and Tigris, which pours its waters into the head of the Persian Gulf.

During the four days we lay at anchor in the roads of Bushire, we were visited by several severe *dust-storms* which delayed our departure for Mahumrah for several hours.

On the 18th March the force destined for Mahumrah set sail under the immediate command of Sir J. Outram, and anchored in the "Shat-ul-Arab," about forty miles below that city, on the 21st of the month. On the morning of the

26th, the men-of-war engaged the enemy's batteries erected on the *Jezireht-ul-Khidhr* or "Abadan-Island," and those at the mouth of the "Bamisheer" river, immediately below Mahumrah and in front of the Persian camp, while the troops were towed up in their rear to effect their landing north of the enemy's great battery. Landing was speedily effected, the enemy's batteries stormed, the Persian army vanquished, and Mahumrah captured before sun-set.

During the whole of this voyage the nature of the sickness was simply such as might be expected from a change of climate and continued exposure to the damp sea and river air at night. The amount of dew deposited at night was very considerable in the Persian Gulf and "Shat-ul-Arab."

Catarrhs, slight rheumatic affections, and ephemeral fevers and diarrhœa, formed the major portion of admissions for treatment while on board-ship; at the same time there were several obdurate cases of primary syphilis. These cases did not discover themselves for medical treatment till the company had been at sea for several days, and then, naturally, they were in an aggravated ill-conditioned state.

Altogether the company was in a fair state of health on the day of attack—only about four men being left behind, sick and unfit for duty, when Mahumrah was captured. These were transferred to the Hospital-ship, and in a short time reported well, with the exception of one havildar, who had neglected to report that he was suffering from primary syphilis till the day of action.

The geographical position of Mahumrah, as bearing upon a sanitary question, may be considered with some advantage.

Mahumrah is a low and almost entirely mud-built town, surrounded by a high turreted mud-built wall. It stands on the north-western bank of the "Bamisheer" river and west of the "Haffar"—two wide rapid-running rivers through which the higher waters of the "Karoon" river fall into the "Shat-ul-Arab."

From the "Bamisheer" a wide ditch runs on either side of the town, and on the north-east side there is a low sedgy swamp. These are filled with water at high tide, but at other times contain only a small quantity, of a muddy polluted nature. On the bank of the "Bamisheer," west of the town, is an extensive date-grove. This grove is most thoroughly irrigated, and is so dense as to shut out entirely all sight of the plain interiorly or of the river from the plain.

At the termination of this grove and close to the site of

the great battery—in the angle formed by the junction of the "Bamisheer," with the "Shat-ul-Arab"—is a large garden, well-stocked with peach, apple, fig, orange trees and vines, pomegranate and fennel. Along the north bank of the "Shat-ul-Arab" are other date groves similarly irrigated and occasionally interspersed with rank pasturage suited to baggage animals. On the western banks of the "Haffar" and "Karoon," and north-east of the town again, there are date groves, numerous nullahs and swamps. These groves with the town form three sides of an irregular square, washed by the waters of the "Karoon" and "Haffar" to the north-east, the "Bamisheer" to the south, and those of the "Shat-ul-Arab" to the west; the remaining, or northern, side being the open country through which the Shahzada and his vanquished army fled.

In the plain thus bounded the British troops encamped, and for the first few days occupied the wretched tents recently deserted by the conquered Persian forces. The nature of the soil of the entire site is alluvial and tenacious to a degree. When rain came down, owing to the flat, low, situation of the plain, the encamping ground became one extensive sheet of mud, only to be dried again by the scorching rays of the mid-day sun. When without rain the intensity of the reflected light and heat was something surprising, and this, coupled with hot winds and clouds of dust, became excessively annoying at times.

Within the date groves numerous species of leguminous plants thrive: liquorice is everywhere abundant, a few species of the primulæ, the veronicæ, and the caryophillæ are also to be found, and save these few specimens of the vegetable kingdom flourishing in the hot-bed of the date groves and the garden, not an herb is to be seen.

After a fall of rain the whole surface of the plain was incrusted with crystals of magnesian and soda salts. When wells were sunk in various localities the water was always found too brackish for drinking purposes—in fact, little other than a saturated solution of these salts. We were also informed that when the freshets came down these rivers, the plain was inundated to the extent of two feet and sometimes more: it certainly had every appearance of being frequently inundated.

Notwithstanding the sterility of our camp we did not experience any great difficulty in obtaining good supplies of meat, fruits, vegetables, and grass for our horses; these,

however, were transported to the camp by Arabs from distant villages, especially from the Turkish side of the river, and from the ancient "Busra." The vanquished army had left behind them extensive magazines of grain, and numerous heaps of chopped-straw, called *boosa*; these supplied our cattle with good dry food for many days.

Great quantities of apples, peaches, dates and almonds, were imported into camp, and although nature appeared to have denied her choicest gifts to the immediate neighbourhood of Mahumrah, we enjoyed from the distant and more genial soils of the north, the rich fruits of the earth in abundance. The face of this country is every where interspersed with date groves, and it would appear that the culture of this wonderful tree fully repays the native for the labour he spends upon it: for, as the ancient poets have sung, the trunk, the leaves, the fruit, the juice, are all applied to hundreds of uses, in every day life.

The most distressing circumstance we had to contend with was the total absence of good, wholesome, *drinking-water.*

The water of the "Haffar" and "Bamisheer" was muddy and daily polluted by the inhabitants of the town and native troops; that contained in the nullahs around the camp was worse; that of the "Shat-ul-Arab" reported by the Arabs to bring on dysentery and other abdominal complaints; that of the "Karoon" abounding in salts in a state of solution and suspension.

The water of the river "Karoon" was, I believe, generally chosen for drinking purposes in preference to that of the "Shat-ul-Arab," and for the following important reasons.

The waters of the "Karoon" have only a distance of some 250 miles to run from their source in the Louristan mountains, whose summits are always clad with snow; they run through a very thinly populated country, and receive the waters of one large tributary only—those of the river "Abzal," of a more northern source; their fall is very great, their course very rapid, *and they are colder some* 12 *degrees*, and much cleaner than those of the "Shat-ul-Arab."

The waters of the "Shat-ul-Arab," on the other hand, are the embodiment of two great rivers. The Tigris and Euphrates—which run for several hundred miles over low, swampy, sedgy land, and through extensive marshes covered with dense tracts of arborescent grasses; the country through which these rivers run, which form the "Shat-ul-Arab," is also comparatively populous. The "Shat-ul-Arab"

water is full of filth; is of a dark, muddy, brown colour, and contains the organic principles of putrescent matter both in a state of suspension *and solution.*

The experience of centuries has taught the Arab, who firmly believes in its unwholesomeness, to seek other water as his beverage.

Notwithstanding the doubtless superiority of the "Karoon" water, it is far from being good, for it contains too large an amount of salts in *solution* and other organic matters in *suspension.*

As our period of sojourn on the plain of Mahumrah was comparatively short—viz., from the 26th of March to the 12th of May—and in a cool season of the year, we fortunately had not to endure much of the intense heat or other evils incident upon a prolonged stay in such a situation. With a heat usually ranging from 60° Faht. to 110° Faht., hot winds blew generally from 10 A. M. until 5 P. M. from various points of the compass. Then a pleasant lull of wind took place until about 7 P. M., after which it became cold, the thermometer sinking sometimes as low as 55° Faht.

A peculiar feature of the locality was the variableness of the winds, blowing from all points of the compass in the twenty four hours. Sometimes the whole camp was enveloped in a thick, heavy, dark cloud, like a fog; at which time it was extremely sultry and choking. At other times hot *dust clouds* swept through the camp for two and three days consecutively. Occasionally very heavy falls of rain inundated the camp, always accompanied by vivid lightning and loud thunder; it was then very difficult to walk about the camp on account of the heavy, soft, tenacious nature of the mud. Not being possessed of barometer or pluviometer, I could neither ascertain the densities of the atmosphere nor the amount of rain which fell in any given period.

After about one month's residence in the camp at Mahumrah most of the European officers, and numerous natives, were seized with an unaccountable feeling of sickness and languor after meals—particularly after the breakfast—which generally ended with the rejection of the meal from the stomach, headache, feverishness, and lassitude: the emesis sometimes continued at intervals throughout the day.

This lasted for a longer or shorter period and then passed off, reappearing at uncertain intervals. Coupled with this disagreeable proceeding, many suffered from diarrhœa and abdominal pains of a severe and protracted kind, the diarr-

hœa was always of a bilious character. At first it was thought that poison had been introduced into the food; many specimens were tested, and the cooking vessels were examined, but nothing in the shape of poison could be detected.

It was considered by many to be owing to the multitude of flies swarming upon every article of food, and rendering them more or less obnoxious to the system by their pollution.

Again, it was attributed to the *water*—a very probable cause—considering its quality, as noticed by me, all of which was more or less brackish and unfit for drinking purposes. Lastly, many considered it to arise from having unwittingly *swallowed a fly.*

All these causes combined are more than likely to have induced this daily vomiting and its concomitants, it is highly probable, indeed, that such was the case to a considerable degree; but I am inclined to believe that this gastric derangement arose more, and in most cases, from the general irritability of the gastro-intestinal mucous membrane, induced by a continued residence in a hot plain, where there were few or no means of keeping the functions of the body natural by exercise. Biliary derangement usually accompanied it, and it yielded to such medicines as were especially pointed to rectify hepatic disorder and that chain of sympathetic affections, which have their source and perpetuation in the many derangements to which the liver is prone in tropical climates.

Among the most prevalent diseases witnessed in this part of the globe we must notice *Ophthalmia* in its various types.

That diseases of the eye should be so universal is scarcely to be wondered at, when we take into consideration the continual glare of sun-light from barren white plains, hot winds laden with very fine dust, and the myriads of flies infesting every place.

A curious circumstance connected with these swarms of flies is that they continually hover about the face and make for the eyes.

Among the Persians and Arabs ophthalmia is, perhaps, the commonest disease. Almost every one of them, men, women, and children, are blind of one or both eyes, and if not blind they present that horrid spectacle of lashless lids with raw edges weeping a thick yellowish white matter, which they care not to remove.

I believe the great prevalence of ophthalmia to be owing as much to the propagation of the disease by means of the *flies* as to such other causes as hot winds laden with fine sand, glaring lights, and the hot reflected rays of the sun, and universal filth of habit. It is surprising to witness how these people permit flies to collect and feed upon these delicate parts! this is always the case when they sleep; then scores of flies may be seen hovering around, and crawling over, and feeding upon the purulent weeping lids!—when they are disturbed, off they fly to transfer the disease from subject to subject *ad infinitum*, while the wretched, apathetic, sufferers take no heed to prevent or cure it.

Their dwellings, their shops, their streets, and their apparel, are the embodiment of filth; and in almost every house may be seen one or more inmates groping their ways about, whose eyes are partially or entirely destroyed by disease; and in every street we meet with the "blind leading the blind."

To particularize the various types of destructive diseases of the eyes, witnessed in these regions, I may mention the following as constantly to be met with, viz. :—

Ophthalmia Tarsi.
Ectropion and Entropion.
Purulent Ophthalmia.
Leucoma covered with Hypertrophied epithelium.
Staphylomatous cornea.
Cataract.

The commonest being the Purulent Ophthalmia and Leucoma with Hypertrophied epithelium.

Among the inhabitants, both Persians and Arabs, I saw a good deal of Psoriasis and Eczema. These diseases are, perhaps, as much owing to the universal filth of habit and clothing as to the low nature of their diet and the unwholesome kinds of water they drink. I met with no cases of elephantiasis or of guinea-worm among these people, although I visited many villages some miles from our encampment.

The British troops—European and Native—did not appear to suffer from any serious kind of disease either in the shape of fevers, visceral derangements, or epidemic.

Hepatic congestions and slight gastric derangements were more or less frequent; never, however, terminating in any fatal results.

There was, perhaps, a larger amount of rheumatic and

pectoral affections among the Sappers and Miners—Bombay and Madras—than other troops, and this I think may be easily accounted for by their peculiar calling. For, while other troops generally remained in dry tents, the Sappers were daily engaged from sun-rise to sun-set in dismantling the Persian batteries, frequently up to their middles in water, making roads and working in the wet date-groves surrounding the camp.

The cases of fever were generally of a mild ephemeral type, seldom being ushered in, or attended by true intermittent symptoms, and they invariably yielded to one or two repeated doses of Quinine exhibited to the amount of *fifteen* or *twenty* grains at each dose.

I am happy to say I had no cases of dysentery, although the accession of such a disorder was to be apprehended among the Sappers and Miners especially.

No epidemic appeared in camp. This, I believe, was owing to the strict sanitary regulations enforced by the Principal Medical Officer. In a standing camp, situated in such an unpropitious locality, it was more than likely that cholera or some other epidemic would have developed itself. Such, however, happily was not the case.

I ought to mention a peculiar seizure or attack that many suffered from, the cause of which remained to the last unaccounted for. At one particular period several sepoys came into hospital with considerable œdema of the *left side* of the face, causing occlusion of the eye. There was no pain, no tingling, and it yielded in a day or two to mild purgatives. At the same time many of the inhabitants of Mahumrah were similarly affected, and, curious to say, the *left* side was in all cases the affected one. What this arose from I never could ascertain—no sting, or mark of any bite was perceptible.

I have already mentioned that our troops were by no means badly off for provisions. At first we had to depend upon the navy and transport ships to a considerable extent; by and by, however, the Arabs found a market which required considerable supplies, and these they poured in from the adjacent country day by day, and our troops accordingly fared well during their sojourn here.

In the month of June, the site of the British camp on the plain of Mahumrah would have been almost unendurable owing to the large sized mosquitoes that swarm up every evening from the swampy date groves and the rivers. Even

in the month of May these pests became terrific. One might pass through successive clouds of them in walking between the camp and the rivers in the evenings. Coupled with these pests there were both *lice* and *fleas* to a formidable extent—indeed, I may say, the earth teemed with vermin! It is more than probable that these latter were bequeathed to us by the vanquished army of Persians.

I think it cannot be doubted, taking into consideration the great heat of the climate with its variable range of temperature, the low position of the camp, and the barren nature of the soil, that our troops must have suffered considerably had they remained there through a hot season.

This misfortune was averted by the unexpected arrival in our camp of the news of peace.

On the 12th of May we broke up camp and embarked for Bombay and Madras on board the transport ship "Hibernia." On the 31st May we cast anchor in Bombay harbour. We now learned that the Bengal Army had broken into open rebellion. The services of the company were at once placed at the disposal of the Government, and on the 16th of June we left that city, for active service in the Deccan.

From the day of our departure from Bombay, to the day of our arrival in Arungabad, 1st July, the company had marched incessantly. These marches were sometimes very long and fatiguing, and the water in many places was of a very inferior quality. On the 30th of June two cases of cholera appeared among the men at Deysgaum: both recovered.

After a summary punishment of mutineers of the Hyderabad Contingent in Arungabad, the column marched under the command of Brigadier C. Stewart, for the "relief of Mhow," in which fort our fellow-countrymen had been pent up some time. We relieved Mhow on 2d August 1857.

The march from Arungabad, thus far, was especially trying to the Sappers. Over and above the regular day's march they had to repair ghauts, fill in nullahs, cut roads to, and from, streams, and often do the work of horses and bullocks, in aiding the transit of heavy guns and ammunition carts. We were generally sent on in *advance* of the force, and this frequently involved us in a *double march* in the twenty-four hours.

After passing through the town of "Boda" cholera appeared among our troops, nor did this scourge leave us until we had been some time in Mhow. Nine cases occurred

among the Sappers, three of whom died—one in Asseerghur, two in Mhow.

The company remained in quarters in Mhow from the 2nd August to the 19th October 1857, and during this time heavy rain fell almost daily. At intervals they were engaged in throwing up defensive works around the fort of that station, often exposed to the rains, and generally working in damp soil.

At the latter end of this month the force marched out upon the rebels, commanded by Heera Sing, then in possession of the fort of Dhar. Here the Sappers were engaged night and day, almost without intermission, in the erection and conservation of batteries. On the 31st of October that fort fell into our hands.

The march was then resumed towards Mahedpore and Mundasoore. This was a very arduous march. The late rains had considerably injured all the roads, and the swollen rivers had obliterated the roads to and from their fords. At the river "Chumbul" the whole company was unceasingly occupied for two days and nights in facilitating the passage of the Brigade, and again at the "Sonor" or "Soore," near the city of Mundasoore.

In the actions fought by the "Malwa Field Force" before this city, on the 21st, 22nd, 23rd and 24th of November 1857, the Sappers acted with the Infantry; on the 24th they effected the demolition of the village of "Goorariah," into which part of the rebel forces from Neemuch had retired.

In our march from the scenes of these actions through Malwa back upon Indore, the Sappers had their usual amount of extra labour. The latter part of the month of December 1857 was again spent in quarters in Mhow.

It will not be surprising, considering the nature of the Sapper's work and the amount performed by them during this march after such a season of rain, that they should have suffered a good deal from fevers and rheumatic affections; indeed almost every man suffered from one or other, or a combination of both during this time.

The climate of Malwa at this season of the year is very cold. The temperature from about sun-down to an hour after sun-rise is so low as to call for the use of clothing suited to inhabitants of a temperate climate: the days were scarcely ever hot.

In January 1858 the company received orders to march from Mhow to Schore with the Siege Train, to join the 2nd

Brigade of the force, now styled the Central India Field Force, assembled there under the personal command of Sir H. Rose, K.C.B.

The weather was very pleasant and healthful, and, as the road from Indore to Sehore was in tolerable repair, the march to that camp was attended with but few difficulties and little extra labour. We halted three days at Sehore. Small-pox was in the town, and in a few days after we had passed through it, the disease manifested itself among the Sappers in a mild form: all the sufferers convalesced in due season.

The march was again resumed for the "relief" of "Saugor." In this march we passed through "Bhopal" and on to the fort of "Rhatghur"—some thirty miles west of Saugor. The enemy in considerable force, commanded by Mahomed Fuzl-Khan, held that fortress, and had much distressed the surrounding country. We sat down before Rhatghur on the morning of the 25th January, and here the Sappers had fresh work in store. The fort is built upon the spur of a long hill, densely clad with jungle; a large stream skirts it from east to west. The only approachable offensive position is on the hill running north of the fort. From the summit of this hill it was determined we should effect a breach, and to accomplish this the Sappers had to cut a road through this jungle for about a mile, for the passage of the siege guns before the work of the batteries could be commenced. This was followed day and night by work in the batteries in this jungle, and the fort fell into our hands on the 28th, when the work of demolition was commenced.

On the 30th a section of the Sappers, under Jemadar Ali Khan, accompanied the force from camp, some eight miles, to the village of Barodia, whither the enemy from Rhatghur had reassembled. Here an affair which lasted some hours came off, and the enemy again fled: the force returned at midnight.

On February 3rd, we relieved Saugor, halted a few days, and then marched east some thirty miles to the fort of "Gurrakotta." This fort was captured on the 13th February and was partially destroyed by the Sappers, who then returned to Saugor.

On the 27th February, Sir H. Rose moved on his brigade for Jhansie, encountering in his march large bodies of the rebels at Barodia, and at the "Mudanpoore" and "Malthon" passes, commanded by the Rajahs of Shahghur and Baunpoor. In this fatiguing march the Sappers put into

defensive order the little fort of Barodia; demolished the fort of "Serai;" demolished the palace of the Rajah of "Baunpoor;" blew down works in the fort of "Tal-Behut," and rendered the passage of the river "Betwa" more facile.

From the day our force sat down before Jhansie—22nd March—to the date of the storming of that city—3rd April—and the day of our departure for Calpee—25th April—the Sappers had nothing but intense labour by day and by night. The nights were now scarcely cool, the days brought us a heat that was almost intolerable, and this, too, was increasing hourly in intensity.

In the batteries, where the Sappers had to spend most of their time, the heat became intensely painful in the day, for there was not a morsel of shade, and we had to endure not only the heat of a mid-day sun direct above head, but also that radiated from hot boulders of granite all around the scene of work, and fierce scorching hot winds blowing upon us all day.

The thermometer in the shade of the coolest tent stood but little below 120°; in the batteries the heat was upwards of 140°!

Sun strokes became frequent, and the hospitals began to fill with sick suffering from visceral affections and attacks of distinct ague and remittent fever. Some of these attacks of fever were very severe, and in almost all *cerebral* derangement appeared most prominent.

I have not the slightest hesitation in saying that most of these cases of fever, which were of a purely intermittent or remittent type, had their origin in the intense heat to which we were hourly exposed.

In each and all there was more or less derangement of the liver and spleen, easily accounted for when we remember the peculiar tendency these organs have to become deranged under the influence of strong artificial, or solar heat. It was quite evident, also, that the nervous system was becoming daily more impaired in most persons, and this manifested itself in an anxiety and irritability of a peculiar excitable character. Temporary aberration of mind was not uncommon, and a delirium of a peculiarly *starting, trembling character* was frequently observed. In fact the systems of most officers and men appeared to be gradually working up to *an aspen-like sensitiveness.*

The killed and wounded, and sick of our force at Jhansie, numbered upwards of *three hundred*; the latter were housed

in the city—in the palace and other buildings of convenience, before the force moved off for Calpee.

The force marched from Jhansie on the *night* of the 25th April—marching during the day was now to be avoided as much as possible. On the 15th May we sighted Calpee, and pitched camp along the south bank of the river "Jumna." A more reviving object to a force situated as ours had been for *three weeks* in barren burning plains, cannot well be imagined than the sight of a clear, broad, running river after the horrors of a march over parched, sultry plains.

This march of Sir High Rose's force from Indore to Calpee, at such a season of the year—and this season, too, a more than usually hot one—was, perhaps, as cruelly painful a necessity as human nature has ever had to endure.

Not only had we the hand of the rebel against us, but nature seemed to begrudge us the two most imperative adjuncts of life—*air and water*.

Air we had, but it was so heated and rarified that it appeared to blow upon us as from a furnace, and was perpetually laden with fine sand and dust, and at all times dried up the skin and produced an insatiable thirst and restlessness, most painful to endure. Water, too, we also had, but in such scanty quantities, and of such an unwholesome quality, that it only appeared to aggravate our sufferings. The oldest campaigners began to long for a termination of their trials; baggage animals dropped down dead upon the line of march, *but there was no decomposition*, they appeared to dry up in the sun like mummies; delirium, paralysis, and death caused by the heat, began to thin our ranks; the men feared to handle their musket and rifles, so intensely heated were the barrels. The sun and heated air were now our bitterest foes.

Notwithstanding all these drawbacks we drove the enemy from city to city, demolished his strongholds, and forced him back into his last strong position, where we daily met him in the open, and as often repulsed him until we finally vanquished him in the capture of Calpee and in the battles of Gwalior. Up to the period of the capture of Calpee we had marched *more than a thousand miles before the enemy*, over mountain passes, through intricate jungles and rivers, and (not without some pride do I say it) much of the most arduous and important work fell unto the B Company of the Madras Sappers and Miners.

How much the progress of a force through such a country depended upon the Sappers, will be apparent. They were

always ready and willing; ever being called to the front, and as often showing their value; and when not engaged in the scientific branch of their profession, they often acted as infantry of the line, every confidence being placed in their loyalty and European-like bearing.

Notwithstanding that our force had marched upwards of a thousand miles, that most were sick and greatly enfeebled, and, I think I may say, satiated with scenes of blood and anarchy, the long-looked for rest by the pleasant waters was not to be enjoyed. Again the order to march was given, and this time Gwalior was the goal.

The rains held back, and the season of heat then endured through the mid-day marches—each man equipped for action at any moment as they were—was more awful than pen can describe. After enduring the trials of a rapid march and four days of continuous hard fighting, in which the Sappers under Lieut. H. Gordon, did good service (as noticed by His Excellency the Commander-in-Chief), the rebel forces were scattered.

Now there was a season of rest. By and by the company marched out of Gwalior for Agra, and ultimately for Calcutta.

There was yet a little more work in store for them, as a body of rebels had taken up a position in a fort on the Jumna.

They proceeded with a party of Sikhs, down the Jumna from Agra in boats to clear that part of the Doab between this river and the Chumbul. In this passage they captured the fort of "Bhaiee" from the rebels after a sharp conflict. They then proceeded to Calcutta, and returned to head quarters in November 1858, having been continuously in the "Field" on active service during *two wet and two hot seasons*—embracing altogether a period of twenty and two months, prior to which most of the company had been on foreign service elsewhere, almost without intermission, for upwards of *seven years*.

It now behoves me to bring to notice such medical and surgical notes as I have thought most interesting, and which I have selected out of a numerous series made by me during this service.

I must preface the remarks I have to offer upon *Cholera* and *Solar Apoplexy*, by stating that each of these subjects is in itself more than sufficient to occupy a separate paper, and therefore the mere glance I shall give to them in this

narrative, will be simply one of a cursory nature; reserving for a future paper or papers what I may have to say upon these obscure and interesting diseases.

CHOLERA.

During the arduous campaign in Central India, from January to June 1858, I am not aware that a single case of cholera appeared in our force.*

We suffered from intense heat, paucity of water—and that of a filthy character—long continued fatigue, exposure to vegetable malaria of jungles; we were exposed to rains and working in water, and frequently to night bivouacs on the banks of rivers and open plains.

Cholera attacked our force—the Deccan Field Force—on its march from Arungabad to Mhow, *after passing through the town of Boda*, south of the river Taptee, and left us after gaining the plateau of Malwa, never again to appear among our troops, although the sufferings and hardships endured in Central India were a thousand times greater.

I am convinced that there are certain *seasons* in which cholera will be more rife than in others; and I think too much importance cannot be attached to the meteorological conditions of the atmosphere, its temperature, its rarefaction, its gaseous constitution.

It will be remembered that I noticed that the bodies of animals which fell dead by the way on the line of march *appeared to dry up without decomposition, like mummies.* This is, in my opinion, a significant fact. It appears that extreme heat *alone* is not sufficient to develop this scourge. During the prevalence of the greatest heat this disease appears to be held in abeyance, though the body may have been debilitated excessively.

If we are to believe that it arises from the system being saturated by *putrescent animal gases*, which is my opinion, then for the elimination of such poisons we require something *more* than intense heat, *we must have humidity of the atmosphere to a certain extent.* With these three in conjunction, viz., *heat, dead animal matter, and moisture*, we have at once the element necessary for fermentive action, and the elimination of putrescent gases amply sufficient to saturate the purest atmosphere, and actually to poison the human body.

* The Saugor Field Division under Major Genl. Sir G. Whitlock, enjoyed a perfect immunity from cholera, during the hot weather campaign of 1858. The whole of Central India appear to have been free from this epidemic, during the official year 1858-59.—Ed. *M. Q. J.*

The more rarefied the air, the greater its capacity for taking up poisonous gases; the more rarefied the air, the greater the respiratory efforts, the greater the debility, and necessarily, the greater the susceptibility to absorption. That tainted air acts as an exciting cause of disease, especially of cholera, cannot be doubted. It impedes the perfect performance of respiration and cutaneous transpiration—more especially when greatly heated.

Whether in these intensely hot seasons, the atmosphere is surcharged with inappreciable poisonous gases, while it is at the same time deprived of more or less of its highly stimulant component—nitrogen; whether its purifying principle—be it ozone or chlorine—be entirely absent or not, are questions of vital interest yet to be decided. During our march from Jhansie to Calpee, the *highly electric condition of the air* and animal bodies was amazing. The hair of the head sparkled vividly when combed in the dark, and horses' tails and manes stood out most grotesquely.

Whether this electric condition of the atmosphere has to do with the absence or otherwise of the choleraic poison, or the immunity of the human system from its influence, supposing the necessary elements of the disease to be present, is another question of considerable importance, and one which deserves our best attention.

I believe I am right when I say, as a general rule, that *cholera is observed to appear at the termination of the heat, and during the first accessions of rain.* It was so with the Deccan Field Force, with the relieving force of Lucknow, and with the force before Delhi. An impetus is given at once to putrefaction; the air is dense, there is frequently an absence of cold sweeping blasts of air; perspiration, which, may-hap, heretofore has been copious and excessive, is suddenly arrested; visceral congestions ensue, and the internal organs, whose resisting and reactionary powers have been almost exhausted by the influence of the previous heat, are immediately affected: coldness of the general surface of the body supervenes, followed by cramps and the other active symptoms of the disease.

In a season of constant rain we need not expect an appearance of cholera. This plague left us at Mhow, nor did it reappear among our troops. This, perhaps, was owing to the constant marching from place to place, and to the heavy rain-storms which had thoroughly cleansed the surface of the earth. It might have reappeared, I fear it would have

done so on several occasions, had we remained long in one encampment. Whenever we did remain over two or three days, the camp was changed, and every precaution taken to avoid undue local accumulations of filth.

Long trenches were dug for the men's necessaries, and these were filled in with fresh soil every night; on the third or fourth day a fresh trench was dug, and so on so long as necessary.

The slaughtering of oxen and sheep was always carried on *without* the camp, and some distance in our rear; and the offal was as often buried as it accumulated: the horse-dung and litter were burnt.

Bathing and washing, as often as opportunity occurred, were encouraged. The men had little time or opportunity of being otherwise than *sober:* a very important point in my estimation.

The great secret of our freedom from this disease, I believe, lay in our constant marching, added to which our men never endured *mental depression,* on the contrary all was hopeful expectation, and though sometimes worn out by long marching in the sun and the fatigue of the battle-field, their *animal spirits* never flagged.

There was no filth of habit or locality, no poverty, no idleness, no fear, no despair; but they enjoyed plenty, though in time of war, and were animated with the hopes of receiving a speedy substantial reward, and honours for services thus performed for their country and sovereign. Our force knew no fears and were depressed by no evil apprehensions, and the general news was of an animating nature.

We are all aware that anxiety and great mental exertion cause rapid wasting of the tissues—especially of the nervous, and that they tend to weaken the frame and cause detention of excrementitious principles in the blood, which latter forms the best nidus for the propagation of zymotic poisons. The subject is too important for me to deal with further in such a narrative as the present, I will therefore pass on to the consideration, *en passant,* of

SOLAR APOPLEXY*.

As I stated above, this subject of medicine and pathology merits a more lengthened notice than I can give it in this paper, I shall, therefore, at this time, content myself with

* Mr. Lowe's observations were written before the publication of the elaborate papers by Drs. Barclay and Crawford in our last Number.—Ed. *M. Q. J.*

merely stating a few facts which seem to me to indicate its cause, its pathology, and the treatment we should adopt, reserving what I may have to remark upon the many cases witnessed by me during this campaign for a future period.

First, then, as to the *cause* of Solar Apoplexy.

I believe we ought to divide this into three distinct heads, viz. :—

a. The predisposing.
b. The proximate.
c. The (immediately) exciting.

The predisposing causes are all such states of the constitution as are induced by previous lax habits of living, exposure to night air of a malarious kind, excessive and long continued fatigue, debilitating disorders of the viscera, bad food, and bad water, or a deficiency of water.

The proximate causes are deficient supply of oxygen in an intensely rarefied atmosphere, insufficient cutaneous exhalations, general debility of the system and atony of the arterial and venous systems, and almost universal adynamia of the nervous force, and *dram-drinking* while exposed to the sun and hot air.

The exciting cause, so far as my observations inform me, is exposure to the sun and an excessively rarefied, carbonized, state of the atmosphere—especially when the atmosphere be highly electrical, dry, and heated.

During the march of our force from Jhansie to Calpee, numbers suffered from *solar apoplexy*, at Poonch, at Koonch, Hurdoowee, at Goolowlee, and Calpee. I attended several who recovered and died, but from the extreme heat and hurried marching, *post-mortem* examinations were rare. The symptoms in each case which came under my observation, were decidedly those of nervous prostration and visceral congestion—especially of the lungs.

There was frequent hysterical sobbing of an irregular kind, burning hot skin, insensibility, insatiable thirst, and total suppression of cutaneous exhalation. Sometimes this state of affairs assumed a milder type—one in fact of *burning remittent fever*, accompanied or followed by *mania* of an irritable atonic type ; at other times, though the *seizure* did not manifest itself in all its violence, and the patient appeared to labor from *fever* which showed intermittent signs, there was still evidence to my mind, of a solar *coup* in the trembling, hysterical, nervous condition of the

sufferer; the peculiar *burning skin;* the laboured respiration and general restlessness.

Taking into account the *three stages of the cause*, as mentioned above, and which I hope to be permitted to amplify upon on a future occasion, I think it will not be difficult to see that most persons who have suffered from solar apoplexy are individuals whose frames have been generally debilitated by one, or all of these causes combined; while it will be apparent that an atmosphere so rarefied by heat, and perhaps loaded with poisonous gases, would, in itself, apart from actual exposure *to the direct rays of the sun*, be sufficient to inspissate the blood to a pathological condition, depress the nervous and tonic forces of the circulatory systems, and so dry the skin as to preclude entirely cutaneous exhalations.

The blood, previously deprived of its watery constituents by profuse transpiration, loaded with the carbonic acid of the system, is no longer fitted or able to carry on the important functions of life; the depressed nervous centres can no longer supply the stimulus needed; cutaneous combustion is arrested, and congestions of a formidable character ensue —especially in the lungs, as evinced by the difficult and painful efforts of respiration.

With such an inspissated, chemically deranged, condition of the circulating fluids; with an almost prostrated nervous system, and a debilitated superficial capillary system, we cannot wonder, at the pulmonary congestion, the sobbing, the tremors, the heat, or that even mania or death should result.

In this place I will simply mention that our plan of treatment should be *stimulant essentially.* We should use the stimulant action of *cold water* to the head, chest, neck and arms, to *rouse the condition of the encephalic nerves, and medulla oblongata*, and cause contraction of the semi-paralysed superficial capillaries; we should exhibit to the patient diffusive stimuli as soon as he can swallow, use frictions to the arms and legs, and mild stimulating gases to the nose, in fact every thing we are cognizant of, to induce visceral reaction and cutaneous transpiration.

The "ready method" of the late Dr. Marshall Hall should be tried, when other means appear to fail. When mental and visceral reaction have set in, judicious treatment will usually restore the patient to convalescence. This will depend, of course, much on the inherent powers of the system, and the former habits of the individual.

I come now to detail those cases of *Surgery* which came immediately and secondarily under my notice during this campaign. The cases I have selected from among many others are, in my opinion, the most interesting, and I hope may prove somewhat instructive to those who have not had such opportunities of witnessing military surgery, as the late Indian rebellion accorded to all who were fortunate enough to be in the field and survive its many accidents.

INJURIES OF THE HEAD.

The following notes of cases of severe injury of the head, although they lead to little of surgical importance, may, nevertheless, be interesting as pathological details.

I need hardly mention the fact that most of the injuries of the head met with in Military surgery are sustained either on the *sides of the skull, or the vertex*, being inflicted either by sabre-cuts or musket-balls; and that such injuries are usually accompanied by concussion, compression, or actual destruction of the cerebral substance with variable results.

The following cases will show how readily memory, sensation, volition, sight, and hearing are suspended or lost from comparatively slight wounds, while in others these faculties and sensations remain for a longer or shorter period after the receipt of the most formidable injuries.

1. On the morning of the 3rd March 1858, while our troops were briskly engaged with the enemy at the "Mudanpoore" pass, my attention was directed to a trooper of the Hyderabad Contingent, by Assistant Surgeon Sanderson.

This man was sitting up in a dhooly, perfectly conscious, and apparently in no pain. He had just been wounded by a musket ball which had entered his head above the occipital protuberance, and slightly to the left of the median line. There was little or no bleeding, and so I conjectured the longitudinal sinus had escaped injury. The aperture made by the ball easily admitted my little finger, which I inserted the whole length to endeavour to find the bullet. The bone was not fractured. The introduction of the finger gave him no pain, and he answered questions when put to him at the moment, quite correctly. He said he could see perfectly. The ball appeared to have passed much in the direction of the inferior longitudinal sinus: it was not found. He had no paralysis, nor contortion of the face, no convulsion, and appeared quite indifferent to the present or future. He died a day or two after the receipt of this wound.

Now, the laceration of the brain in this instance must have been severe and extensive, yet there were no symptoms in the beginning to show that this man had sustained any such injury. A choroid-plexus or venæ galeni may have been ruptured, but the unequivocal signs of sanguineous effusion were absent. We have usually grave indications to note the fact of idiopathic rupture of cerebral vessels; in this man's case there was nothing to demonstrate organic mischief, but the hole in his skull, and the line of the passage of the ball in the substance of the brain.

2. On the morning of the storming of Jhansie, Lieutenant J. B———, Bombay Engineers, was knocked from the summit of a ladder, when in the act of escalading the wall, by a blow on the head and face from some large missile, or perhaps, the butt end of a musket.

I saw him drop from the ladder, as I thought killed, but instantly afterwards leisurely walking, without his cap, and stumbling, through the line of the enemy's fire towards the spot where I was operating. I expected to see him shot down every yard he walked, but he came on apparently unconscious of danger. When he arrived he was in a semi-stunned condition, with his face bleeding. I found he needed but little attendance, as he soon began to rally—the evil to be apprehended was in the inflamatory stage that might set in. Rest and purgatives restored this officer's health.

Such accidents as these are sometimes followed at a distant period of time by cerebral affections of a very serious nature, and even mania, and the most careful treatment is required.

3. The same hour, a water-carrier of the Madras Sappers was shot in the head. The ball had entered just above the right temple and passed out behind the posterior suture of the right parietal bone. When I saw him, brain was exuding in a pultaceous form from both apertures, and the skull was extensively fractured. He was much convulsed and the muscles on the left side of the face continued to contract without cessation almost to the moment he expired.

These convulsions would appear to indicate that the intercranial origin of the nerves of the face had been injured, either by effusion of blood or from extension of the fracture to the base of the skull, especially about the petrous portion of the temporal and sphenoid bones; as mere injury to the *right lobe* of *the cerebrum* could scarcely originate them. These cases, however, are always obscure.

4. The same day a private of H. M. 86th Regt. was wounded in the head by a tulwar, in the palace stables. A large body of rebels was found secreted there sometime after we had obtained possession of the palace. They were slain to a man, and upwards of a dozen of our men were very severely wounded in this bloody conflict. The private referred to had his head as nearly cloven in two vertically, as possible, notwithstanding that he had received such a wound, he walked out of the stables across the palace yard, carrying his musket into the palace. His skull was divided to the left of the great sinus, from the forehead to half-way down the occiput, and in this division of the skull the cerebrum was deeply included. The wound gaped, at this time, fully *two and a half inches*, and driven into the substance of the brain were several long spiculæ of bone, which I removed—pieces of the inner plate of the parietal. I then brought the two sides of the poor fellow's head together, like gently closing an over packed box, bandaged him, and then dressed several other of his wounds. All this time the man sat up, and continued to talk of the fearful conflict—of which he was a specimen—he had just left; was quite coherent, suffered from no convulsion, and said "he should be all right, please God, in a few days." This man lived several days after he had been thus wounded.

5. A day or two after this the Pay Havildar of the Madras Sappers was killed while assisting in the expulsion of a body of rebels from a strong house in the town. This house was, as many native houses in Central India are, well loop-holed, and from its peculiar construction, offered much resistance to our guns. The havildar desirous of ascertaining the strength of the enemy in this keep, looked through one of these loop-holes, and instantly fell wounded to die in a few minutes. A large matchlock-ball had torn away the right side of the skull and brain. A six-pound shot could scarcely have done more damage. He died convulsed. He was decidedly indiscreet, but he was a brave man, and died much regretted.

6. A camp follower of the Bombay Sappers received a blow upon the left side of his head, from a stone driven against him by a round shot, while he was in a battery two days before Jhansie was stormed. He was insensible when I saw him, almost pulseless and cold. On examining the head at the seat of injury, I found a large swelling upon the left parietal bone, but could detect no fracture. The

left side of the face was also swollen. The pupils were contracted and he breathed heavily: he had also passed his fæces and urine involuntarily. Cold lotions were applied to the head, and a diffusive stimulus given in an enema. He remained much in the same state for twenty-four hours, and then began to rally. He grew warmer, the pulse rose, and he became partially sensible. He continued to rally and vomited a quantity of greenish offensive fluid. He was then freely purged, and the cold lotions were continued to the head. Hour by hour, his senses returned to him, and in three or four days he was discharged cured. The arterial reaction never rose so high as to call for blood letting.

These cases are, at first-sight, somewhat contradictory, but are easily interpreted if we remember one or two facts.

In mere wounds of the cerebrum we have, as seen, no loss of motion, sensation, or volition, the man can walk, talk, see and feel, in many instances; but if the cerebro-spinal system be interfered with—if injury be inflicted upon the crura medulla oblongata, or simply upon the primitive trunk of the *8th pair* of *nerves*—then we have all the symptoms in train which usher in destruction of life from the moment of the receipt of the injury; the chances of recovery, of course, depending upon the extent of lesion in these delicate and intricate passages of life.

This last case was one of severe concussion. He remembered nothing after the receipt of the wound—memory, volition, and the senses were temporarily annihilated. Contrasted with others before detailed, where vast and irreparable injury to the brain was *not immediately followed* by *insensibility*, it is, I think, striking in a pathological point of view.

WOUNDS OF THE NECK.

Wounds of the neck received in action are—from the delicate and immediately vital parts concerned—especially dangerous.

7. On the 3rd April—the morning we stormed Jhansie—Lieut. F——, Madras Sappers, was wounded while cheering on the men of the 3rd Bombay Europeans, immediately below the enemy's walls. The ball entered his neck about half an inch below the angle of his jaw on the left side. He fell, and speedily grew insensible from excessive hœmorrhage. I was called to attend this officer by Lieut. Gordon, and when we had conveyed him to the rear of a little tomb, I examined the wound. He was quite incoherent, and his neck and face

swelled so rapidly, that I feared immediate suffocation would kill him. The ball had passed between the angle of the jaw and the sterno-mastoid muscle, in a direct line for the external carotid artery. The hœmorrhage was considerable and in jets. I introduced my little finger—the best probe I think we can use in such cases—as far into the wound as it would go, but could not discover the ball. As I was immediately under the enemy's fire, I contented myself with applying firm pressure on the wound with my fingers and along the external carotid artery, until I could remove him to a safer spot. By and by the bleeding by jets ceased; I applied a cold wetted compress to the wound, and secured it by a tailed bandage around the head, and sent him in a dhooly to camp.

I was about *enlarging the wound to seek for the wounded artery, and to apply a ligature above and below the breach;* but as the bleeding ceased, I was deterred, for I then believed it to arise from the *occipital artery*, and as hœmorrhage had stopped, I hoped further interference would not be needed.

Events confirmed my opinion. He suffered severely from spasm about the *neck* and *chest*, and occasional difficulty of breathing for some ten days; but there was no return of hæmorrhage, and in due season he made a tolerably favourable recovery, with his head turned to one side, and the bullet still in his neck.

Considering the vital parts the missile must have traversed and injured, I think this officer has to thank Providence he is still in the land of the living. He returned to England on sick leave.

8. A day or two after the "storming," Lieut. S———, of the Bengal Army, doing duty with a Bombay Battery, was engaged with others in expelling a body of rebels from a strong house in the city. He was shot through the neck, *at the larynx*, and had the good fortune to cough up the ball into his own hand. He bled a good deal at the time, and immediately lost his voice. The external wound healed in due course, but he did not recover his voice, and never could speak above a *cracked whisper*. The superior and recurrent laryngeal nerves must have been cut or torn, and the vocal cords and the delicate muscles of the larynx considerably injured. He was under my charge en route from Calpee to Cawnpore with other sick and wounded going to England.

WOUNDS OF THE CHEST.

9. Lieut. C———, Bombay Artillery, was shot through the chest at the siege of the fort of Dhar, while pointing an eighteen-pounder gun in one of the batteries. The matchlock ball struck the breech of the gun and then glanced off, entering the left chest a little below and external to the nipple. He lost some blood and grew cold and faint. The ball passed through the cavity obliquely and lodged beneath the integument, below the angle of the scapula towards the side, where it was extracted, but without any piece of his flannel shirt which it had carried before it. He spat up no blood at the time, nor did I learn that he did so subsequently, and I therefore concluded that the ball had penetrated the cavity of the chest and run round between the lung, and the pleura lining the wall of the chest, to the site of its lodgment. This, I believe, was owing to the oblique direction given to the ball by its impinging upon the gun before it wounded this officer. At a more direct angle, the ball must have passed through the lungs.

Sometime after he returned to Mhow copious suppuration ensued, and there escaped from the wound a piece of flannel shirt; he eventually recovered.

10. Lieutenant H. N. D. P———————, Madras Engineers, was wounded by a matchlock ball in the left chest at the battle of "Mundasoore," on November 21st 1857.

A rebel was covering Lieutenant Dew, 14th Dragoons, when Lieutenant P———————— charged him and received the contents of his matchlock in the left side, whereby the life of Lieutenant Dew was saved.

The ball coursed beneath the integument for about four inches, tearing in its passage the serratus-magnus and an external intercostal muscle. The piece of integument between the apertures of entrance and exit was divided, and the wound gradually granulated up.

This officer suffered pain for a long time whenever he attempted to raise the arm, also slight difficulty of breathing, and occasional catching pains on taking a deep breath.

I have no doubt that sub-acute inflammation of the pleura beneath the torn intercostal muscle ensued; and in all probability slight adhesion between the two pleuræ remained. This officer had to be conveyed from camp to camp with the force in its movements after the enemy, consequently the strict repose so necessary for the proper treatment of such cases was not enjoyed; he, however, rejoined

the Central India Field Force in about two months afterwards.

11. In the general action before "Mundasoore," on the 23rd November 1857, Serjeant Major Kelly, of the 86th Regiment, was wounded by a musket ball in the back, which passed into the chest at a point about opposite the root of the lungs. The ball lodged; there was no external appearance in front to mark its situation. The little finger passed readily into the wound—there was no costal fracture. Symptoms of effusion rapidly ensued, he coughed up great quantities of red blood; he was verging on collapse; there was great oppression and difficulty of breathing, and inability to lie in the recumbent position, as feelings of sudden death came on.

Copious bleeding from the arm relieved difficulty of breathing; this became so intense in about ten minutes, that I repeated it again to give him much temporary ease. He said he was dying, and in a few more minutes closed his eyes for ever.

Now, in this case, much benefit might have resulted had an elastic catheter been introduced into the chest to have drawn off the rapidly effused blood, which so suddenly suffocated him. However, it might only have been of a temporary benefit, as the nature of the case and the suddenness of death, notwithstanding two large bleedings from the arm, I think pretty plainly indicate that one or more large vessels at the root of the lungs had been wounded.

Had the wound been enlarged, the pressure of the effused fluid and coagulated blood might, perhaps, have been taken off for a time. Fatal asphyxia, however, supervened too rapidly to permit of further assistance being rendered.

12. A soldier of the 14th Dragoons was wounded the same day in a charge upon the enemy. The ball passed into the chest about three inches below the left sterno-clavicular articulation, and lodged. He bled a good deal, expressed intense agony. There was no fracture about the aperture of entrance, and blood continued to well away. He did not spit up any blood, nevertheless he suffered from extreme dyspnœa and could not bear the recumbent posture. He begged only for frequent draughts of cold water, and to be permitted to die untouched. No bullet could be discovered. He was not bled, and ultimately recovered.

This man thought he must die. The ball probably formed a cyst for itself in or about the mediastinum, and so prevent-

ed further distress. Had it rolled down upon the diaphragm, more or less pain, irritation, and inflammation, must have occurred—perhaps to be followed by empyema and its serious results.

13. During the siege of Rhatghur the rebel forces made an attack upon the rear of our camp in considerable numbers, and in the evening, after they had been repulsed, one of their numbers was conveyed into the hospital tent of the Sappers and Miners—wherefore to my hospital I know not. I admitted him and found him suffering from a spear wound in the right side of the chest, inflicted by a sowar of the Hyderabad Contingent. The spear had passed into the base of the right lung through the seventh intercostal space, and left an external gaping wound about two and a half inches long, through which there constantly welled away a considerable amount of blood, and the lung was visible. Each time he took a breath more blood gushed out from the wound and lung, intermixed with air globules. He also spat up a good deal of blood. He was not collapsed, nor did he express any amount of anxiety over and above that induced by an occasional accumulation of blood in the bronchi and trachea.

His pulse was tolerably firm, and he was warm, but complained of much thirst and asked for repeated draughts of cold water. He expressed the greatest repugnance to surgical or medical interference, and said he should soon be well if left alone. There was slight emphysema towards the back and epigastrium. I laid him on the wounded side for a few moments, a good deal of blood now escaped from the opening. I then bandaged the chest *above and below the wound; united the edges of the wound closely* with several sutures and sticking-plaster, then applied a cold wet pad of lint, and retained the whole by a large tailed bandage, *and again placed him on the wounded side* with the hope that adhesion would take place between the two pleuræ—a maxim inculcated by the late talented Surgeon Guthrie, and one which I am perfectly convinced is wise and judicious.

He was not bled, bearing in mind, as I did, the general asthenic condition of natives, but I gave him a mixture of laudanum, acetate of lead, and dilute acetic acid with aniseed water, every three hours.

By the time the force left he was in a fair way of recovery, no urgent symptoms of pleurisy or pneumonia having manifested themselves, and the wound having nearly healed.

Few wounds, perhaps, are attended with greater danger than lance and sabre wounds of the chest, from the fact that life is seriously perilled both at the moment of the receipt of the wound, from loss of blood, and afterwards from the infiltration of the chest with serum and blood, and the double effects of inflammation of the pleuræ and lungs, and inaction of the injured lung through *atmospheric pressure.*

In this case I closed the wound *at once,* notwithstanding the large amount of blood which continued to pour forth from the incised lung. All the blood that could be removed, before closing the wound, I believe escaped when the man was placed *on* the wound at first; I then closed it and allowed nature to do the rest. After closure of the wound there appeared to be little, or no great, effusion into the cavity of the chest.

It is probable that the wounded vessels of the lung contracted, both from the amount of blood lost prior to his being dressed in camp, and from the sedative action of the medicines he took subsequently.

The condition of this patient some time afterwards would have been interesting; but when the force moved upon Saugor he decamped. A European would in all probability have died from such a wound.

14. A camp follower was also admitted suffering from a spear wound in the right side of the chest, between the 3rd and 4th ribs, and about one inch and a half from the sternum.

The enemy pounced upon him in the jungles in rear of our camp while he was tending some cattle, speared him, and drove off the cattle.

When he was admitted he was in a great state of exhaustion and could scarcely breathe; not apparently, however, from great loss of blood. The wound was about an inch and a quarter long, and the 4th costal cartilage was partially severed. I could not ascertain that internal hæmorrhage of any serious nature was going on; nevertheless he continued to gasp irregularly and spasmodically, and by and by, began to toss about. Respiratory power appeared to me to be paralysed, but not from fluid accumulation.

The wound was immediately closed; he took diffusive stimuli, but without apparent benefit, and died in about two hours after admission.

I could scarcely reconcile the event with the cause. However obscure the immediate cause of death may be in such

cases as these, I believe we have some reason to ascribe it, now and then, to a lesion not usually noticed by authors, I mean to destruction, by division or otherwise, of large branches of the sympathetic nerve, of branches of the par-vagum, or of the *phrenic*-nerve which, apart from actual loss of blood, would be enough to cause death—asphyxia resulting sometimes as speedily from *cessation of nervous power*, as from large effusion of blood into the thoracic cavity, whereby the capacity of the aërating surface is rendered too limited for the purposes of life.

In the case above detailed, I was led to this opinion from the absence of such positive signs of hæmorrhage as usually mark the nature of the wound; from the peculiar spasmodic breathing; and from the tossing about and rapid cessation of pulse.

15. After the capture of Jhansie an extraordinary case of chest wound came under my notice in the person of a sowar of the Hyderabad Contingent, as some seventy wounded of this Contingent were under my charge for several days, in a large house set apart for them in the city.

This sowar with several others had entered a house, strongly occupied by the enemy, and while taking aim with his carbine upon one knee at a rebel in an adjacent room, another rebel, armed with a large tulwar, came behind him and with one sweep of his weapon laid open both cavities of his chest—the wound extending across the back from close below the right scapula to about five inches of the left of the spinal column.

It was a clean cut, and when I saw the man the whole wound was gaping for about two inches, and both right and left lungs were apposed to its edges, and in a state of incipient gangrene. The respiratory movements were well observed; the exposed portions of the lungs were quite insensible to the touch; there was no bleeding from any part of the wound, and suppuration was going on. A more formidable looking wound I have rarely seen; indeed it appeared that a little more force only would have been needed to have cut the man in two. The spinal column escaped being severed, from the shoulders being raised, and the back bent convexly towards the rebel; and this tense condition of the parts, when the wound was inflicted, will account, perhaps, for its extent, its cleanness, and its gaping; while the escape of the lungs from incision, I believe, may be accounted for by the fact that men generally take aim *immediately after an*

expiration, and when the lungs are comparatively empty of air and in a state of momentary quiescence.

He was anxious, pulse 104 small, slight cough, expectoration sticky and rusty, breathing abdominal and 35 per minute; no symptoms of effusion into the chest, mucous *rale* over a greater portion of both lungs, bowels open, urine scanty. Does not sleep at night, and suffers from weakening perspirations.

Thus, it will be observed, when I saw the patient he was in a dangerous condition. The wound was open and suppurating; the lung—so much as was exposed—was dying; there was pleuro-pneumonia, and arterial and nervous depression, but, as yet, no empyema.

In a case of this nature a question naturally suggests itself on the propriety of closing up such a wound. In the present instance I felt it could do no harm, while it might tend to the recovery of the man by excluding as much as possible the effects of the atmosphere on the parts exposed; trusting to combat the effects of inflammation by other appropriate treatment.

I therefore drew together both edges of this enormous wound by sutures and long firm pieces of sticking plaster, as closely as possible, leaving here and there apertures for the escape of pus, and thereby, as I hoped, to obviate the accession of empyema. Over this I placed long, soft, pads of lint, and supported the whole by a large tailed bandage. After the first dressing he expressed himself relieved and could breathe easier.

I then ordered him port-wine and mutton chops, and a mixture of ammonia, æther, laudanum, and aniseed-water every three hours, and a grain of morphia at bed time.

He was dressed daily. On the third day the condition of the wound was improved—union had taken place in several parts. The cough grew less, night-sweats decreased. Motion in bed of the slightest degree, however, tended to protract the union a good deal. In a few days he was improving generally; whether he ultimately recovered I can't say, as we marched for Calpee, and he was left behind, with other wounded.

This case, though not complete, is an example of the propriety of closing up *incised* chest-wounds, of whatever size, as soon as possible. Had this been done the day he received the wound, the condition of the lung, as seen by me, might not have resulted; and knowing, as we do, the won-

derful recoveries natives make after the receipt of wounds of the severest nature, I think fair hopes might have been entertained.

Their fatalistic belief, and the general asthenic character of their constitutions, are, perhaps, considerable adjuvants to the surgical and medical treatment we adopt.

WOUNDS OF THE UPPER AND LOWER EXTREMITIES, GUNSHOT AND SABRE.

Gunshot wounds affecting the upper extremity are always more amenable to surgical interference, and considerably less prone to be followed by untoward results, than similar wounds of the lower extremity, whether these be caused by musket or cannon balls, sabre, or lance.

So much has the science of Surgery progressed the last twenty years, that we find we need rarely amputate the entire arm, save in such cases as those in which the limb has been shattered by round-shot, and the great vessels and nerves are more or less destroyed. Even in such cases, when we find the articulating surface intact, we save the joint, if possible, for appearance sake.

The question, so far as concerns Surgery exercised on the battle-field and line of march, regarding *primary* and *secondary* amputations, is fully settled; the sooner a limb is amputated after the receipt of a severe wound—necessitating such removal—the better for the patient, and the greater chance will he have of living.

16. On November 23rd, in the general action between the Malwa Field Force and the rebel army from Neemuch, near the city of Mundasoore, a sepoy of the Hyderabad Contingent was conveyed to the rear, where we had established our hospital upon a little hill, with his right arm shattered at and above the elbow joint, by a round-shot from the enemy's guns.

In the absence of his proper medical officer, I was requested to amputate the arm, which I did at the upper third, in the sound parts, by the flap operation. The humerus below the part sawn, and the elbow joint, had been smashed to pieces.

I saw this man six months afterwards in the hospital established for the wounded of this Contingent in Jhansie, looking the picture of health. I at once recognised him and examined the stamp, when, to my surprise, one of the ligatures placed on an artery the day I amputated, was still hanging from the line of union of the flaps (and a peacock's

feather tied round the stump), no doubt detained there by a superabundance of osseous matter thrown out in the process of healing. It was still firmly adherent, and I left it alone.

17 and 18. The second day after this action, a little girl, the daughter of a sowar of the Nawab of Jaora, who had joined the rebel forces at Neemuch, and an old woman of about 60 years, were brought together to my hospital—from the battle-field where they were found, each with a leg in a state of *compound comminuted fracture*, caused by the bursting of a shell, or shells on the day of action.

The little girl's left leg was fractured just above the ankle joint, and the lower end of the tibia was splintered and protruding, and the soft parts around were dark coloured, dirty, and dry.

The old woman's right leg was fractured in much the same place, the fibula protruded, and the soft parts between it and the tibia were destroyed, dark coloured and sloughy, and contained one or two bits of bone.

As no great vessel had been injured, and as the joints in both cases were untouched, I considered the best plan to be adopted was to appose the fractured bones, remove what splinters were visible, place the legs in an immovable easy position, and apply warm stimulating foti to the wounds.

The greatest difficulty was experienced in keeping the old woman quiet, who seemed dissatisfied with everything that was done for her, and kept the whole hospital alive with her cries of "*bobbery*."

However, both wounds soon began to take on a healthy granulating character; they suppurated freely; osseous union took place in both; and in some ten days afterwards they were both in a condition to be conveyed away to their friends. How they ultimately progressed I don't know, most probably both recovered, as natives have wonderful powers in sustaining and overcoming such accidents.

19. On the line of march from Mundasoore to Indore, a private of the Madras Sappers sustained a gun shot wound through the right shoulder-joint, by the accidental discharge of a loaded fowling piece, while he was getting into a ghari, in which sick men were being conveyed.

The charge passed through the shoulder, entering just above the free margin of the pectoralis major muscle, and passing out behind, about an inch below the acromion process. He bled a good deal at the time, but it was evident

no artery of importance had been wounded. As the charge consisted of large shot, paper, and rag, much was to be feared from irritation and inflammation in and about the joint; beside which many of the shots, it might be presumed, would lodge and induce considerable suppuration, for a longer or shorter period.

The wound of entrance was small, the charge had passed out behind by two or three openings. A probe introduced discovered nothing which could be extracted, the wound was, therefore, well fomented and poulticed.

In a day or two pieces of paper, rag, and many shot came away in the suppuration, and this continued some twenty days, when the apertures closed, and the joint lost most of its mobility. Some weeks after, spiculæ of bone came away from a little abscess which pointed about the insertion of the deltoid muscle, again to be followed after the lapse of some months by other extrusions. He lost ultimately considerable motion in the joint, and was pensioned.

Had a ball passed in the same direction, it is more than probable that excision of the head of the humerus would have been necessary, and with much the same results—loss of motion of the joint, and pension.

Amputation of the hand is seldom required, injuries to this part being amenable to so many conservative principles; but sometimes such occurrences take place without the advice or interference of the surgeon, when two foes are engaged in single combat in battle.

20. On the 23rd November a sowar of the Hyderabad Contingent rode up to the site occupied by the doctors, dismounted, and then showed his right arm (I think it was) minus the hand, which had been clearly severed off at the wrist joint by an enemy's tulwar. He was in good spirits, and there was no hæmorrhage. The wound was as circular and clean as though a surgeon had performed the operation; the integuments had retracted above the radius and ulna and exposed the scaphoid bone in the articulating cavity of the radius. There was nothing more needed in this case than the removal of the scaphoid bone and the articulating lamina of the radius and ulna, to enable the surgeon to bring down the integument over the bones for the formation of a stump.

This was done by Dr. Mackenzie, and I have no doubt the man did well.

21. At the battle of the "Betwa," on the morning of

the 1st April 1858, Lieutenant P———— sustained, in the grand charge of the British Cavalry on the enemy's lines, two severe sabre wounds upon the left arm and hand. He was conveyed from the scene of action to his tent in the Sapper lines, and was attended to by a medical officer near at hand. After returning from the field about 4 p. m., I found this officer in his tent on his bed anxiously awaiting some unknown awful event. I found he had been sabred upon the left arm through the deltoid, and again upon the hand. The left thumb being cut off, save by a small piece of integument on the inner side; three fingers had also been cut, but not seriously.

A *tourniquet* had been applied to this officer's *axillary artery*, for what purpose I am at this moment ignorant, and on my removing the same he naturally expressed fears of his bleeding to death, which, however, soon vanished. I then removed a clot of blood from the wound in the deltoid muscle, which was three inches long and penetrated to the bone, which was uninjured, brought the clean edges together by three or four sutures and plaster, bandaged above and below the wound and applied a little pad of lint soaked in cold water.

I then examined the thumb, which was severed through the proximal phalanx, and only hung to the hand by a small piece of internal integument. So slight, indeed, seemed the connection that he said he "was nearly biting it off on the field of battle when he saw it dangling about."

Now, knowing the importance of the conservation of the thumb, and remembering that *tendons* would unite after division—as clearly demonstrated by Mr. Stanley—as well as muscle and bone, as seen in every day life in Surgery, I had no hesitation in assuring this officer that he need not complete the amputation with his teeth, and that in all probability he would yet have a useful thumb.

I accordingly apposed the cut surfaces as neatly as possible with plaster, improvised a thumb-splint, bandaged it up, and directed that *warm water* should be constantly applied to it.

The wound in the upper arm soon united and a fine seam only remained, in a few days, also, the thumb had grown together, so that he could dispense with the splints and roller, and eventually slight motion was restored, of flexion and extension. This officer having sustained such severe constitutional shocks during this campaign, was recommended by

me to England on sick leave. I have no doubt he has now a good useful thumb; but I believe the results of his *chest wound* trouble him. He has received the Victoria Cross for his conspicuous bravery.

In this case, notwithstanding the intense heat of the season at the time, the thermometer in the tent standing at 120°, I considered it most prudent to order the thumb to be bathed *constantly with warm water*, to encourage the circulatory powers through the small slip of integument, and also to aid in the maintenance of the little vitality there might be left in the distal severed extremity. If I could succeed in this, I had hopes of saving the thumb. The chances, I must admit, were very small, but they were, considering the importance of the part, well worth relying upon; the result was not less gratifying to this officer than to me, as it clearly demonstrated an important surgical point, viz.:—*the union of tendon and restoration of motive power;* while it afforded a lesson worth remembering in conservative Surgery.

22. The same day a serjeant of Bombay Artillery, during the pursuit of the enemy towards the river "Betwa," got into close conflict with a number of rebels in a dry nullah. He cut down two with his sword, and was in his turn cut down, and then hacked a good deal by a rebel while he lay on his back fighting. I attended to this wounded man. His left arm was cut through about the deltoid muscle down to the artery, which was not wounded. The bone was not splintered. His hand was nearly severed off at the wrist, and he had two severe cuts on his back—one on each shoulder blade—a cut in the back of the neck, and one on the back of the head. He lost a good deal of blood, but there was no excessive hæmorrhage. The wounds were dressed, and he died soon afterwards, doubtless from the effects of the repeated rapid *shocks* he had sustained.

23. During the siege of Jhansie, a Bombay sapper on duty in a battery on the "right attack," had his left arm carried away just below the shoulder by a round shot. He died in a few minutes from *shock*. The axillary artery, surrounded by its nerves, hung down from the wound, but did not bleed, it was firmly contracted some distance from its torn extremity, and pulsating. I made no further examination as the heat in the batteries was too intense, and he was quickly buried. Sufficient, however, was seen to show how completely nature operates to suppress hæmorrhage,

when an artery is thus rudely and completely divided. Had this man lived, an interesting subject would have presented itself, on the propriety of placing a ligature above the contracted end of the artery. Cases have occurred where men so injured have recovered without the artery being tied; in all such instances, however, I think it would be better to be on the safe side and to tie the vessel.

24. At the storming of Jhansie, 3rd April 1858, I accompanied the escalade party on the "right attack," and established myself behind a wall only a few yards from the points of attack, where I directed all wounded to be brought for immediate attendance. Among numerous cases of bullet wounds of the arms and legs, there was one which, I think, deserves especial notice.

Private ———, B Company, Madras Sappers, was wounded by a musket ball in the lower third of the right thigh, while advancing with the ladders for escalade. He bled profusely after he fell. When I examined him I found the ball had passed obliquely downwards, from about the site of "Hunter's canal," through the popliteal space, and had emerged between the tendons of the biceps. He complained of acute pain, and blood welled profusely from both apertures. I at once placed a tourniquet on the femoral artery about the apex of Scarpa's triangle, rolled the leg upwards to the knee, put a fine pad of wet lint over the popliteal artery, and pieces of wet lint over the wounds, and sent the man in a dhooly to the Field hospital, for the treatment I thought necessary, but which I could scarcely perform under such a fierce fire. I had no doubt of the man's popliteal artery being wounded, and I was convinced that most of the blood, after the tourniquet had been applied, *came from the lower divided end of the artery, as it continued to well up* out of the wounds *dark coloured, and profusely.*

I was engaged for three days after this in the city, and when I visited the Field hospital, I found this poor fellow in a tent alone, surrounded by a most putrescent atmosphere, dying from mortification of the limb. No further surgical interference had been instituted. This man might have lived *had I cut down upon the wounded vessel and tied both upper and lower ends,* at least it would have given him a chance of life, which I fear he lost in not having been immediately operated upon.

25. Wounds of the foot from musket balls are always more or less dangerous owing to constitutional derangement,

induced by destruction of parts of the complex mechanism, but they rarely call for operative interference as a *primary resort.*

A sepoy of the Hyderabad Contingent under my care in Jhansie was wounded in the foot by a musket ball. When I saw him the foot was swollen, red, tense and painful, and on the instep there was a small irritable looking wound scarcely large enough to admit a probe. He said a bullet had struck him there, and that was all he knew. From the appearance of the parts I felt convinced the ball had lodged. I introduced the probe towards the cuboid bone, and at once came upon the ball. I then enlarged the wound, introduced a pair of dressing forceps and extracted the ball after some little trouble. A good deal of pus followed at the time, and he expressed himself much relieved. Up to the time I left the foot was going on well. Had the ball been deeper among the tarsal bones, it is highly probable the man would have lost his foot, or life, from tetanus.

26. In the same house was a sowar of the Hyderabad Contingent, who had received a severe sabre wound upon the right knee joint. The joint was much swollen, very sensitive to the touch; and the cut, which extended from the head of the tibia across the ligamentum patellæ to the external condyle, was gaping and pale coloured, and there was much suppuration from the joint and surfaces of the wound. He was anxious, and appeared in countenance more like a man who had suffered much and long from chronic disease of the joint, than one who had only recently been wounded in the battle field. The weather was insufferably hot, and this doubtless tended to intensify the constitutional derangement.

I placed the limb in the *straight* position, leeched the joint repeatedly and largely whenever an exacerbation of pain came on; gave him diffusive stimuli, tonics, wine, and animal food during the day, and morphia at bed time, and kept warm flannel sedative foti constantly applied to the joint.

In a day or two he began to improve in general health and spirits, the wound looked healthier, discharged less, and the joint decreased in size a good deal, and he bore manipulation with much less suffering. By and by the wound was in a condition to be brought together at its two extremities with adhesive plaster.

How he progressed I don't know. It was a dangerous

case, and may have ended in loss of the limb, if not probably in anchylosis of the joint. Such cases are hard to treat in the battle field, they are difficult enough in quiet cities, and civil practice.

I fear I have extended this paper to an unusual length, although I have curtailed many cases; nevertheless I trust the matter brought forward will, in some measure, atone for this almost unavoidable length—seeing that it has carried me over a period of nearly two years of active field service.

P. S.—I feel that it is nothing but just that I should mention here the very valuable assistance I at all times received from my Assistant Apothecary R. Harvey, whose assiduity and unwearying attention to the sick and wounded, under the most trying circumstances, called forth not only my admiration, but that of the Officer Commanding. He behaved most gallantly at "Gwalior," and "Bhaiee," and afforded medical aid to the company from Calpee to the date of their arrival at Dowlaishweram.

OOTACAMUND,
August, 1860.

Table showing the range of the Thermometer, &c., at Mahumrah, Persia, in the month of April 1857.—*Camp.*

Date.	Faht. Ther. Maximum.	Minimum.	Mean.	Rain.	Meteorological Observations.
	°	°	°		
Apr. 1	92	60	76	None.	Sky clear, wind S. W., very hazy.
,, 2	93	65	79	.....	Cirro-cumuli, evening dull, wind S. W. dull.
,, 3	96	70	83	.....	Sky dark, dense cumuli, wind S. E. blowing hard.
,, 4	86	61	73	Showery.	Sky dark, wind S. E. and S. W., lightning and thunder.
,, 5	90	65	77	.....	Sky cloudy, threatening, wind S. E. by E., clouds of dust.
,, 6	94	70	82	.....	Sky clear, wind S. E. by E. very high, evening cloudy.
,, 7	85	60	72	Heavy Showers	Wind S. very high, clouds of dust, heavy storm of rain.
,, 8	80	65	72	.....	Sky serene, wind N. W. cool.
,, 9	90	65	77	.....	Day warm, clear and fresh, wind N., full moon.
,, 10	95	65	80	.....	Cloudy and sultry, wind S. E., heavy rain at night.
,, 11	75	61	68	.....	Cool, cloud, showery, wind N. E. by N.
,, 12	64	60	62	Much Rain	Heavy rain and storm, wind N. E. and S. E., N. W. at night.
,, 13	76	59	67	.....	Sky covered with bright cirro-cumuli, wind N. E.
,, 14	87	65	76	.....	Wind W. at night, sky serene, wind W. soft.
,, 15	87	65	76	.....	Fair, clear, and cool, wind N. W.
,, 16	87	64	75	.....	Fair, a few cumuli and striæ, wind S. E.
,, 17	95	72	83	.....	Sky serene, wind S. W. soft.
,, 18	98	70	84	.....	Wane and cirro-cumuli, clouds, wind S., night very stormy, lightning in N. S. and E.
,, 19	95	70	82	.....	Sky cloudy, night wind S. strong.
,, 20	92	70	81	Heavy Rain	Heavy rain with lightning, wind S.
,, 21	94	75	84	.....	Sky studded with cumuli, wind S. W.
,, 22	88	70	79	.....	Sky clear, wind S. N. light.
,, 23	85	75	80	.....	Do. wind S. light.
,, 24	78	65	71	.....	Do. wind N. W. fresh.
,, 25	85	65	75	.....	Cloudy, wind W. gentle.
,, 26	85	68	76	.....	Sky clear, wind S. W. gentle.
,, 27	97	70	83	.....	Very hot and sultry, wind N. fitful.
,, 28	98	74	86	.....	Dull, hot wind blowing all day, wind N.
,, 29	104	73	88	.....	Dust storms, wind N. E. S. and W., hot and dry.
,, 30	86	75	85	.....	Sky cloudy, dull, wind W. cool.

Table showing the range of the Thermometer, &c., at Mahumrah, Persia, in the month of May 1857.—*Camp.*

Date.	Faht. Ther. Maximum.	Minimum.	Mean.	Rain.	Meteorological Observations.
	°	°	°		
May 1	83	70	76	.....	Cloudy and dusty, wind N. high and cold, night bright, moonlight
,, 2	94	68	86	.....	Cloudy, hot wind N. W. and S.
,, 3	96	73	84	.....	Sky clear, wind N. and W. hot, and laden with dust.
,, 4	98	75	86	.....	Sky clear, wind N. W. cool and fresh.
,, 5	97	70	83	.....	Cloudy, close, and hot wind N. W.
,, 6	100	80	90	.....	Wind S. W. and S. strong, hot dust storm all day.
,, 7	105	78	91	.....	Do. do. do
,, 8	110	68	89	.....	Sky cloudless, wind S. very hot and dry.
,, 9	107	67	87	.....	Do. do. wind S. W. very hot, evening cold, moonlight
,, 10	110	80	95	.....	Do. do. wind S. W. very hot.
,, 11	108	75	91	.....	Evening cold, clear.
,, 12	...	...	...	.....	Sultry, wind S. E. very hot.

THOMAS LOWE, *Assistant Surgeon,*
B Company, Madras Sappers and Miners.

ART. II.—*Remarks on the treatment of Acute tropical Dysentery, by large doses of Ipecacuanha, with extracts from Official reports on the subject, in the records of the office of the Principal Inspector General, Medical Department.* BY WILLIAM ROBERT CORNISH, Esq., Staff Assistant Surgeon, Madras Medical Service.

THE subject matter of this communication requires but a brief introduction at my hands. In the months of July and August 1858, Surgeon E. J. Docker, H. M.'s 7th Royal Fusiliers, gave to the profession, in the pages of 'The Lancet,' the result of his experience of the use of large doses of ipecacuanha in acute dysentery. In the island of Mauritius, where his Regiment was stationed for nearly six years, dysentery of a severe and fatal type frequently prevailed amongst the European troops, and he had ample opportunities of testing the value of this, as compared with other modes of treatment. The mortality from dysentery in former years ranged from ten to eighteen per cent., but after commencing the ipecacuanha treatment, Mr. Docker lost only one out of fifty-three cases

treated; or somewhat less than two per cent., and the fatal result in that single instance was due to abscess of the liver. To enable the stomach to retain the ipecacuanha, Mr. Docker applied sinapisms to the epigastrium, and preceded it by a draught containing one drachm of tincture of opium, half an hour after which the powder in the form of boluses, or in a draught was administered in doses of from thirty to ninety grains, according to the urgency of the symptoms. Mr. Docker's papers, which were illustrated by the details of numerous cases thus treated, attracted considerable attention amongst medical officers in India, many of whom proceeded to test the plan of treatment so recommended.

In March 1859, Superintending Surgeon Kellie, attached to the Centre division of the Madras army, brought to the notice of the late Director General of the Medical Department, that the course of treatment recommended by Mr. Docker, had been extensively tried by Dr. M. Rogers, Surgeon of the 1st Battalion, Artillery, and with the most gratifying results. A brief report by Dr. Rogers, of certain cases thus treated by him, was officially circulated by the head of the Department, to the medical officers of the Madras army, with a request, that the large doses of ipecacuanha might have a fair trial by those in charge of European hospitals.

In December 1859, Surgeon J. Arthur, Madras Fusiliers, submitted a report on the subject, illustrated by the details of numerous cases thus treated, whereupon a circular letter was directed to be addressed to the Medical Department, calling for information on the following points, with the view to publication in an official report.

1. The number of patients treated, with the results.
2. Whether any other treatment was employed to complete the cure.
3. The period of convalescence, after large doses of ipecacuanha, as compared with that after other modes of treatment.

In due course replies were received from a considerable number of medical officers. Some from want of opportunity, or disinclination to change their usual practice, had no personal experience of the mode of treatment in question; no fewer than thirty-four, however, submitted the results of their practice, in the desired form, and the whole of the papers connected with this subject, have been kindly placed at my disposal by the Principal Inspector General, for publication in the pages of this Journal.

To bring the observations of the various medical officers within a readable compass, I have been obliged to omit details of cases, and observations not bearing directly upon the point at issue. I hope to be forgiven by my medical friends, for thus curtailing their reports, I believe, however, that no facts of importance have been omitted. One of the reports in question by Mr. Blacklock, is an elaborate and carefully drawn up paper, and instead of quoting extracts to accompany these observations, it will, I hope, appear in an entire form, in an early number of this Journal.

It must be premised, however, that the use of ipecacuanha in large doses in the treatment of dysentery is merely the revival of an old, but in later years, almost obsolete form of practice. It is well known to the profession that ipecacuanha was originally introduced into the European Materia Medica, not on account of its emetic properties, but as the *radix anti-dysenterica*. Piso, the original introducer, brought it from the Brazils, where, in all probability, he learnt the mode of using it from the natives of the country. He administered it in drachm doses, and in the form of infusion. The native Indians of the Brazils are in the habit of using it, to this day, in a similar manner. On its first introduction in 1686, ipecacuanha, administered in the manner prescribed by Piso, acquired a great reputation in Paris as a successful remedy in cases of dysentery.

This high opinion of the remedy was not lessened, when Helvetius, who came to Paris from Holland, where he probably acquired a knowledge of the drug and the mode of using it from Piso, obtained a reward of 1,000 louis-d'or for the publication of his secret, and when it became known that the Dauphin (son of Louis XIV) had been cured of a dangerous attack of dysentery by its use.

The mode of administration adopted by Piso and Helvetius appears to have gradually changed. In most of the epidemics of dysentery which prevailed in Europe during the eighteenth century, of which we have any record, ipecacuanha entered largely into the treatment, but chiefly as an emetic in the early stages of the disease, and in small doses combined with rhubarb, simarouba, opiates or bark, in its subsequent progress. General bleeding, laxatives, emollient injections, astringents and counter-irritation, were also employed. The use of mercurials in the treatment of dysentery does not appear to have been common until the year 1804, when, according to Lichtenstein, calomel and opium

proved very successful in a severe epidemic at the Cape of Good Hope. Calomel seems gradually to have taken the place of ipecacuanha, for we find it used largely, though by no means successfully, in the severe dysentery which prevailed amongst the British troops composing the Walcheren expedition in 1809, and the expedition to New Orleans, in 1814, by Sir J. McGregor, during the Peninsular war, and later still in India, by Annesley and others, who recommended scruple doses of calomel at night, followed by purgatives in the morning.

The revival of the original mode of using ipecacuanha was due to a Mr. Balmain, who, in the Memoirs of the Medical Society of London, *(Vol. V, page* 210,*)* describes the plan of treatment adopted by him. He began to use from half a drachm, to two drachm doses, in combination with laudanum, and in many cases he found that a dose or two was sufficient to remove every dangerous symptom. Mr. Balmain was indebted for his knowledge of this manner of using the remedy to his friend Mr. Wentworth, who, it appears, obtained it from some practitioner (name unknown) of high repute, for his success in the treatment of dysentery.

In 1813, Mr. George Playfair, of the Bengal Medical Service, published a paper (Edin. Med. and Surg. Journal, Vol. IX, page 18,) "*On the good effect of a combination of Ipecacuanha and Laudanum in Dysentery.*" Mr. Playfair states that he was induced to try this treatment, from having seen, in some medical periodical, a paper on the subject, and in consequence of the great mortality he had witnessed under other methods. Although he does not mention Mr. Balmain, it appears most probable that he referred to that gentleman's paper in the Memoirs of the Medical Society of London, which has just been alluded to. In the severe forms of dysentery then prevailing in Bengal, the treatment was uniformly successful, when adopted at the commencement of the attack. Mr. Playfair gave ipecacuanha in doses of from ʒ ss. to ʒ j.; with an equal proportion of laudanum. The effects of these large doses, as described by Mr. Playfair, coincide in a remarkable manner, with those witnessed by Mr. Docker, and the numerous medical officers who have given them a trial in this Presidency. The late Dr. Conwell, of the Madras medical service, so long ago as 1825 was in the habit of using similar doses with great success.

Dr. Mortimer, for many years Surgeon to the General Hospital at Madras, gave at one period of his career twenty

grain doses ; but subsequently he adopted the modified practice advocated by Mr. Twining, and of late years the system of giving large quantities has fallen somewhat into disuse ; Indian practitioners generally being content with the moderate doses recommended by Twining, in combination with blue pill and extract of gentian.

The practice of using small doses, however, has not met with universal favor from those experienced in the treatment of acute tropical dysentery. There are some still resident amongst us, who have always used ipecacuanha largely and considered it their sheet anchor in the treatment of this formidable disease. Surgeon Major J. Forbes, now of the garrison of Bellary, was for many years attached to the 2nd Regiment of Madras European Light Infantry, during which time his Regiment occupied the unhealthy barracks at Secunderabad, so long notorious for formidable outbreaks of dysentery, and the frontier station of Tonghoo, in Burmah. He was in the habit of treating dysentery, by ten or fifteen grain doses of ipecacuanha, frequently repeated. Dr. Forbes was for many years one of the most successful practitioners in the treatment of dysentery, of whom our service could boast, and his success, it is believed, depended mainly upon the judicious use of ipecacuanha, in the early stages of the disease.

From what has been advanced then, it will be evident that the mode of treatment so ably advocated by Mr. Docker is no novelty, but that gentleman, nevertheless, is entitled to the credit of reviving, what in all ages, and in every climate, has been the most speedy and efficacious treatment of acute dysentery.

That dysentery is a most fatal disease to Europeans in India is universally admitted, but it may not be generally known, that, so far as the returns of the Madras army for a series of years illustrate its statistics, it causes *one-fourth* of the whole mortality. From the year 1842 to 1858-59 inclusive, embracing a period of seventeen years, with an aggregate strength of 176,629 British troops, 6,133 died in hospital, and of this number dysentery was the cause of death in 1,532 cases, or 24·9 per cent. of the whole. The mortality has varied somewhat during the above period, but I cannot satisfy myself that the improvements, or supposed improvements, in treatment, have materially modified its ratio. In some years, and at particular stations, the disease has shown itself in an epidemic form, and of a more severe type than usual. Exposure on Field service has ge-

nerally had an unfavourable influence in increasing the admissions from dysentery, although the mortality has not in all instances borne a corresponding ratio. The following table will show the proportion of admissions and deaths from dysentery in the European and Native armies of this Presidency, for the last seventeen years. It will be seen that the lowest mortality of European troops during this period occurred in the year 1848, when the ratio of deaths to treated from this disease fell so low as 5·9 per cent., the highest mortality 8·6 per cent., having occurred in the previous year 1847. The average mortality for the whole period being 7·1 per cent., and in Native troops 5·3.*

Table showing the Admissions and Deaths from Dysentery in the Madras Army, for a period of seventeen years.

Year.	Europeans.					Natives.				
	Strength of the Army.	Treated.	Died.	Percentage of		Strength of the Army.	Treated.	Died.	Percentage of	
				Treated to Strength.	Deaths to Treated.				Treated to Strength.	Deaths to Treated.
1842	12,080	1,912	121	15·8	6·3	74,614	937	81	1·2	8·5
1843	12,436	2,008	158	16·1	7·8	73,763	846	54	1·1	6·3
1844	13,057	1,360	89	10·4	6·5	73,083	1,046	73	1·4	6·9
1845	12,548	1,625	102	12·9	6·2	74,861	1,087	66	1.4	6·07
1846	11,113	1,439	98	12·9	6·8	74,682	979	71	1·3	7·2
1847	11,429	1,346	116	11·7	8·6	67,950	974	63	1·4	6·4
1848	9,679½	841	50	8·6	5·9	55,946	742	53	1·3	7·2
1849	9,559	905	72	9·4	7·9	50,030	631	27	1·2	4·2
1850-1	9,136	704	45	7·7	6·3	50,448¾	556	25	1·1	4·4
1851-2	9,119	1,011	71	11·08	7·01	49,881½	540	40	1·08	7·4
1852-3	9,170½	1,413	109	15·4	7·7	49,747½	1,321	51	2·6	3·8
1853-4	8,291	1,085	91	13·08	8·3	47,887	1,188	63	2·4	5·3
1854-5	9,021	923	72	10·2	7·7	46,988	1,194	43	2·5	3·6
1855-6	7,599	865	62	11·3	7·1	47,938	1,116	41	2·3	3·6
1856-7	7,513	686	46	9·1	6·7	47,968	1,411	54	2·9	3·8
1857-8	9,396	871	60	9·2	6·8	47,952	1,679	86	3·5	5·1
1858-9	15,482	2,437	170	15·7	6·9	57,643	1,530	68	2·6	4·4
Total...	176,629¼	21,431	1,532	12·1	7·1	991,346¾	17,787	959	1·7	5·3

In treating of the mortality from dysentery, it must be borne in mind that there are other diseases entered in our official returns, which are often closely allied or connected with it, especially during the prevalence of dysentery as an epidemic, or endemic, in a particular locality. I allude more

* Upwards of twenty per cent. of the British troops, attacked by dysentery in the Crimean Campaign of 1854-55, died.

especially to "diarrhœa" and hepatic disorders. The admissions under the head "Diarrhœa" may be traced to obviously different causes. For instance, during the prevalence of cholera, the milder forms of the disease, where there is simple looseness of the bowels, come under this head, and all irregularities of the bowels from errors of diet, change of temperature, &c., are so included; on the other hand diarrhœa is in many cases the precursor of dysentery, and it is often difficult to distinguish where the one ends and the other begins, the pathological condition of the intestines being generally the same, although the usual dysenteric symptoms may be masked, or absent. Diseases of the liver, more especially suppurative inflammation of that organ, so often co-exist, with dysenteric symptoms, that it is often not easy to determine which is the primary, and which the secondary disease.

This is particularly the case in the occasional outbreaks of dysentery at Secunderabad, where it is always found that a large number of men suffer from hepatic inflammation, and suppuration, at the time when dysentery is most severe and fatal.

I have constructed a table showing the ratios of admissions to strength, and of deaths to treated, from dysentery, diarrhœa, and liver diseases, in the European and Native armies, with the view of determining the question, whether there is any corresponding ratio in the frequency of, and mortality from, these diseases. The results are given below. A careful study of this table will show that there is, in the greater number of years, a close connection between the rates of sickness and mortality, in Europeans from dysentery and hepatic diseases, but the connection (probably from the circumstances just noticed) is by no means so clear with regard to "diarrhœa," especially in the mortality from that disease.

The increased frequency of these diseases, since the occupation of the province of Pegu, in 1851-52 by Madras troops, is well shown, particularly in the Native army, in which, notwithstanding the greater prevalence of these forms of disease, the mortality, it will be seen, has generally diminished of late years.*

The marked increase of admissions from the diseases alluded to, during the year 1858-59, is very instructive. It will be within the recollection of most of the readers of this Journal, that towards the end of the official year 1857-58,

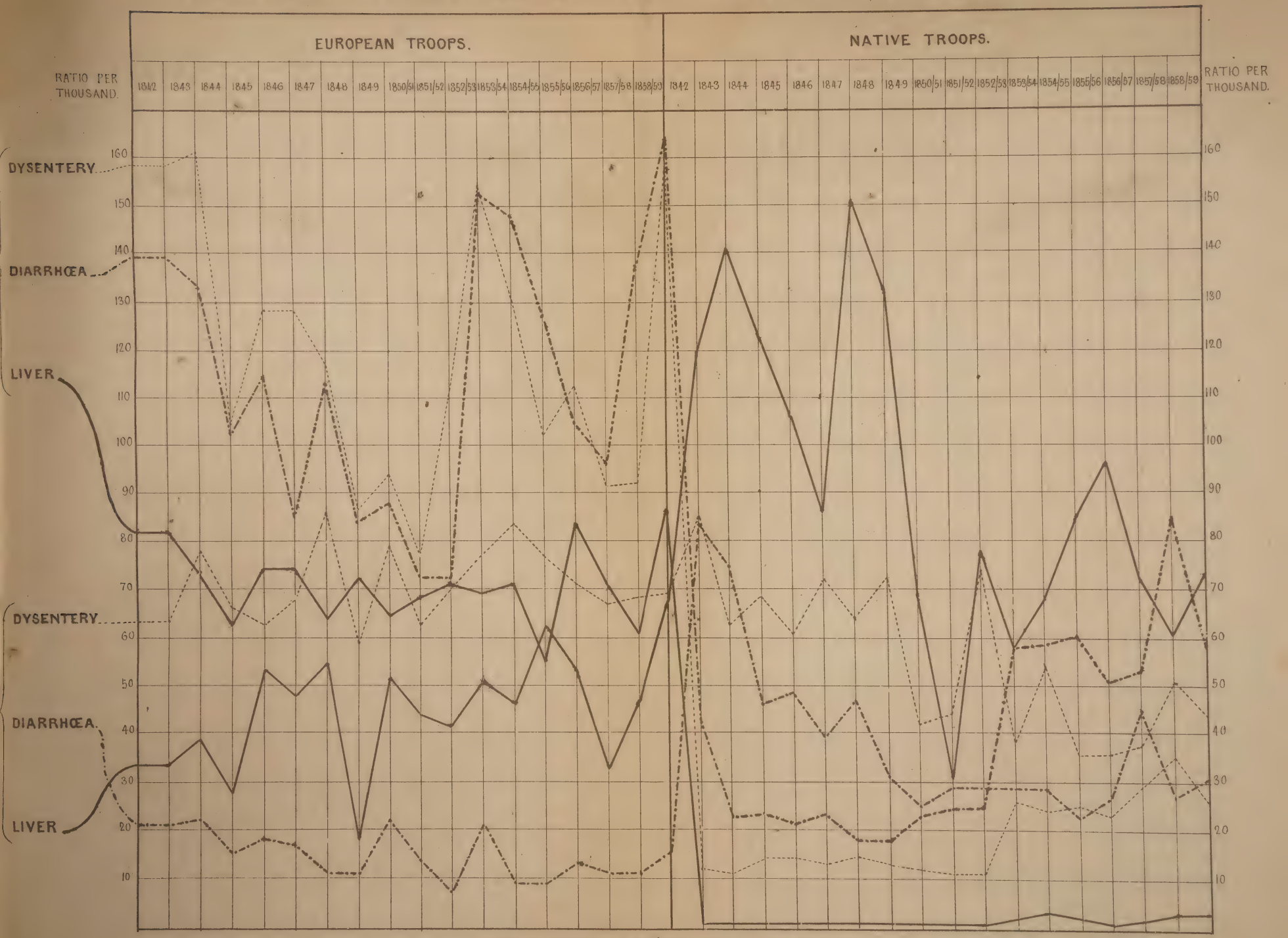
*The variations in these diseases, are best seen in the accompanying diagrams.

the European force in this Presidency was suddenly doubled in strength by the arrival of several entire regiments from home, and this large influx of men unaccustomed to a tropical life, has had an unmistakable effect, in augmenting the ratios of sickness and mortality, of nearly all the diseases common to this country. The aggregate sickness and mortality, excluding cholera, which has not been generally prevalent, has been higher during the past year, than in any of the preceding sixteen years, noted in the tables. It is undoubtedly true in one sense that there is no such thing as "acclimatisation," and that the ratio of mortality generally increases with the years of service in a tropical climate, but it is no less true that new comers, as a rule, suffer greatly from sickness, and that the mortality is usually high, in British corps, during their first two years of Indian service.

Table showing the ratios of treated to strength, and deaths to treated, from Dysentery, Diarrhœa, and Hepatic diseases, in the Madras army, for a period of seventeen years.

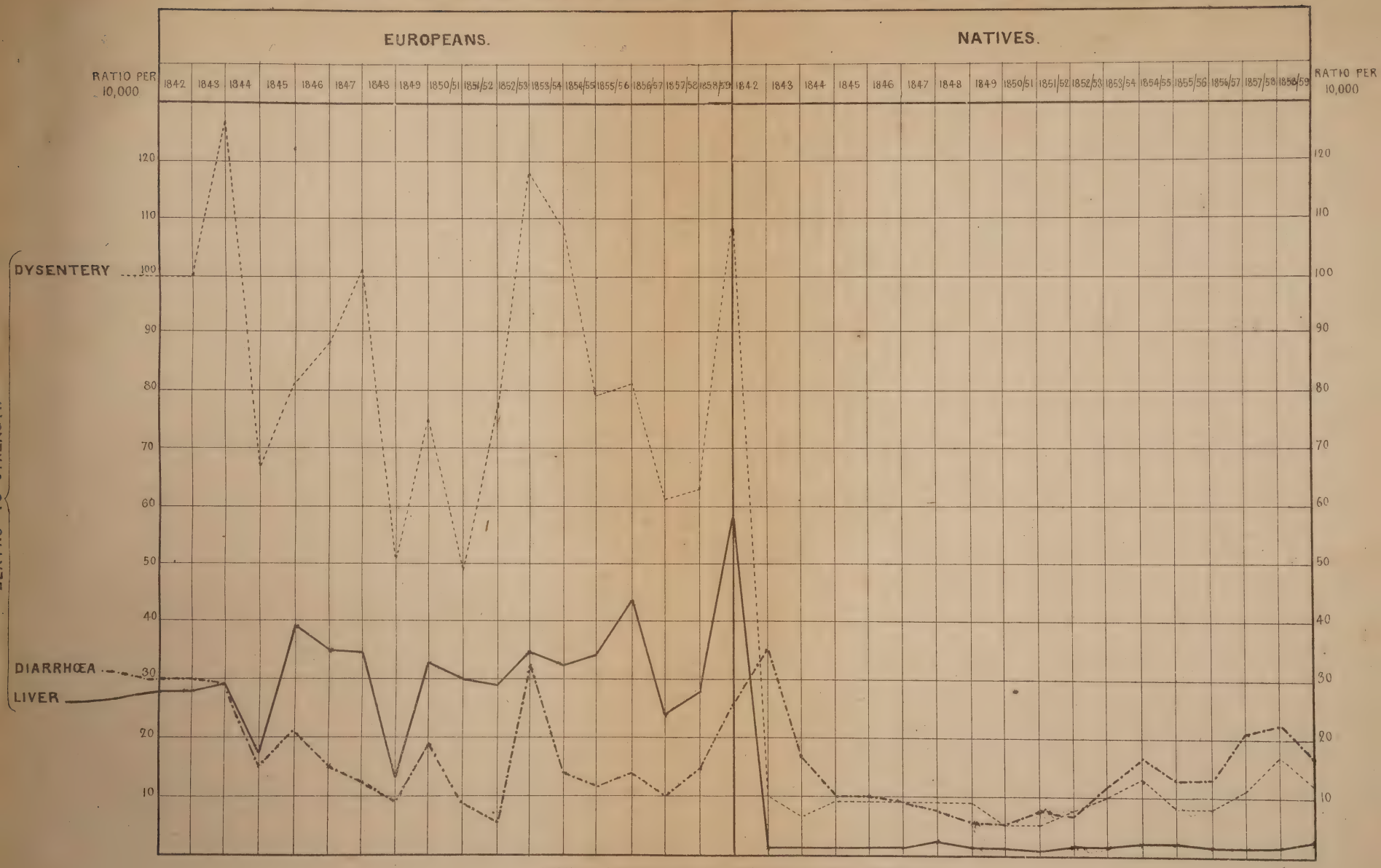
Year.	European Troops.						Native Troops.					
	Dysentery.		Diarrhœa.		Liver.		Dysentery.		Diarrhœa.		Liver.	
	Per-centage of		Per-centage.		Per-centage of		Per-centage of		Per-centage of		Per-centage of	
	Treated to Strength.	Deaths to Treated.	Treated to Strength.	Deaths to Treated.	Treated to Strength.	Deaths to Treated.	Treated to Strength.	Deaths to Treated.	Treated to Strength.	Deaths to Treated.	Treated to Strength.	Deaths to Treated.
1842	15·8	6·3	13·9	2·1	8·2	3·4	1·2	8·5	4·2	8·3	0·1	12·0
1843	16·1	7·8	13·3	2·2	7·3	3·9	1·1	6·3	2·2	7·5	0·1	14.1
1844	10·4	6·5	10·2	1·5	6·2	2·8	1·4	6·9	2·3	4·6	0·1	12·3
1845	12·9	6·2	11·5	1·8	7·4	5·3	1·4	6·07	2·1	4·9	0·1	10·7
1846	12·9	6·8	8·5	1·7	7·4	4·8	1·3	7.2	2·3	3·9	0·1	8·6
1847	11·7	8·6	11·3	1·08	6·4	5·5	1·4	6·4	1·8	4·7	0·1	15·05
1848	8·6	5·9	8·4	1·09	7·2	1·8	1·3	7·2	1·8	3·1	0·1	13·1
1849	9·4	7·9	8·8	2·2	6·5	5·1	1·2	4·2	2·3	2·5	0·1	6·9
1850-1	7·7	6·3	7·2	1·3	6·8	4·4	1·1	4·4	2·4	2·9	0·1	3·1
1851-2	11·08	7·01	7.2	0·7	7·06	4·1	1·08	7·4	2·4	2·9	0·1	7·8
1852-3	15·4	7·7	15·3	2·1	6·9	5·05	2·6	3·8	5·8	2·9	0·2	5·8
1853-4	13·08	8·3	14·8	0·9	7·05	4·6	2·4	5·3	5·9	2·9	0·3	6·8
1854-5	10·2	7·7	12·7	0·9	5·5	6·2	2·5	3·6	6·00	2·2	0·2	8·5
1855-6	11·3	7·1	10·5	1·3	8·3	5·3	2.3	3·6	5·06	2·7	0·1	9·6
1856-7	9·1	6·7	9·6	1·1	7·05	3·3	2·9	3·8	5·3	4·4	0·2	7·2
1857-8	9·2	6·8	13·8	1·1	6·03	4·7	3·5	5·1	8·4	2·7	0·3	6·08
1858-9	15·7	6·9	16·4	1·5	8·7	6·7	2·6	4·4	5·8	3·04	0·3	7·3
Average.	11·8	7·1	11·3	1·5	7·05	4·6	1·8	5·4	3·8	3·8	0·15	9·1

DIAGRAM SHOWING THE RATIOS OF ADMISSIONS AND MORTALITY FROM DYSENTERY, DIARRHŒA AND HEPATIC DISEASES.



DRAWN BY A.BARREN, LITHE BY J.DUMPHY, GOVT. LITHO. PRESS, CHEPAUK 1860.

DIAGRAM SHOWING THE MORTALITY TO STRENGTH FROM DYSENTERY, DIARRHŒA AND HEPATIC DISEASES.



DRAWN BY A. BARREN, LITHS. BY J. DUMPHY, GOVT. LITHS. PRESS, CHEPAUK, 1860.

To return to the subject more immediately before me ; I have collected, and tabulated, all the well authenticated cases of dysentery treated by large doses of ipecacuanha, to be met with in the official papers on the subject.

The table embraces the cases of 297 Europeans and 218 Natives, treated by no fewer than thirty four medical officers of H. M.'s British and Indian Medical Services. It may be stated, that no case has been admitted into it, regarding which there could be any doubt.

From the accompanying extracts from the reports of the various medical officers, it will be evident that the cases were not *specially selected* for the experiment, but in fact were the ordinary dysentery admissions to be met with at the several stations. The success of the treatment appears to have been most marked, as might have been, *a priori*, expected, in Europeans suffering from acute uncomplicated dysentery. Of the whole number treated, (297) four cases proved fatal—giving a death rate of only 1·3 per cent. instead of 7·1 per cent., the average for a period of 17 years. Of the four fatal cases, one was a man of intemperate habits, and symptoms of delirium tremens supervened upon the attack of dysentery. Two were complicated with hepatic abscess, the latter being the immediate cause of death, and in the remaining case, symptoms of ulceration of the intestine were present, before the adoption of this mode of treatment. It is remarkable that so large a number of cases of acute, uncomplicated dysentery, should have been treated *without a single casualty*, even supposing the type of the disease to have been the same at all stations, and that it was of unusual mildness. In the case of H. M.'s 44th Regiment, the good effects of this mode of treatment are well shewn. The Regiment was new to India, having arrived only at the end of the year 1857 ; it occupied the barracks of Fort St. George. During the year 1858-59 there were 104 admissions from dysentery, and the first 68 of these were treated in the ordinary way with a mortality of 6. or 8·8 per cent. The remaining thirty-six cases, with twenty three occurring in the year 1859-60, making a total of 59, were treated with large doses of ipecacuanha, and *all recovered.* Mr. Mee thinks that the type of the disease had become milder before beginning the ipecacuanha treatment, but admitting this to be the case, the contrast in the results of treatment, is very striking. Although the large majority of medical officers pronounce strongly in favor of this treatment only in the acute, uncomplicated dysentery of Europeans, yet there can be no doubt, from the experience of

others, that it has had a remarkable effect, in some cases, where the disease had passed beyond the first stage, and where deposition in the submucous tissue, or ulceration, already existed. In such cases, however, the remedy requires judicious management, and its operations to be carefully watched. Further experience is required before we can determine how far it should be depended upon in cases which have advanced to the second stage, before coming under treatment. It is hoped that some of the numerous medical officers interested in the subject, who have time and opportunities at their disposal, will place upon record their views with regard to this latter point. I need not observe that the editors of this Journal will be glad to receive any communications regarding it.

The treatment of dysentery, as it occurs in the Natives of India, by ipecacuanha administered in large doses, has been less successful than in Europeans.

The comparison is perhaps scarcely a fair one to make, as the table contains the cases of convicts in jail, as well as of sepoys, several of the former having proved fatal. It is well known that the inmates of Indian jails suffer from a form of dysenteric diarrhœa which is usually very fatal. The disease, as it has come under my own observation, appears to be connected with a depraved condition of blood, induced by a long course of semi-starvation; and in some cases the effects of change of food, from ordinary to jail diet, overcrowding, and deficient ventilation, have all acted in producing the disease. The symptoms are almost invariably of an asthenic character; there is diarrhœa at first, the stools feculent and passed without pain. As the disease progresses, the stools become more frequent, bloody, and full of mucous, and often contain a bright green coloring matter in considerable quantity. This colouring matter is probably due to altered blood, but it is a fatal symptom. I do not remember any case having recovered in which this appearance was seen in the stools.

Treatment, in such cases, is merely palliative, and they are obviously unsuited for the experimental trial of ipecacuanha in large doses.

Independent of this, I believe that further experience will show that the judicious use of ipecacuanha in acute dysentery, as it affects the natives of this country, will be found the most successful plan of treatment with which we are at present acquainted.

The table shows that out of 218 natives treated, there were eight deaths, the ratio of mortality being 3·6 per cent., or below the average in the Madras army for seventeen years.

Table showing the results of treatment of Acute Dysentery by large doses of Ipecacuanha.

Station.	Name of Medical Officer treating the cases.	Europeans.			Natives.			Remarks.
		Treated.	Died.	Percentage of Mortality to Admissions	Treated.	Died.	Percentage of Mortality to Admissions	
Bangalore	Drs. J. Arthur, Pringle, Maitland, &c., 1st M. F.	30	0	0	0	0	0	
Do.	M. Rogers, Esq.	17	0	0	0	0	0	
Bellary	A. Chester, Esq.	10	0	0	0	0	0	
Cannanore	Dr. W. S. Murray	58	0	0	0	0	0	
Chicacole	C. A. Andrews, Esq.	0	0	0	8	*1	12·5	* This was a chronic case, and the patient greatly emaciated.
Cochin	F. Day, Esq.	5	0	0	19	0	0	Seven other cases are mentioned in Mr. Day's table, but as they did not return after the first dose was given, the results are not entered, and they have been omitted.
Coconada	E. E. Lloyd, Esq.	*4	0	0	0	0	0	* Another case was treated, but the patient would not persevere with the ipecacuanha. He subsequently recovered.
Cuddalore	C. J. Rogers, Esq.	1	0	0	5	0	0	
Cuttack	T. Croudace, Esq.	1	0	0	9	*2	22·2	* Both of these were chronic cases, weakly, emaciated subjects, and unfavorable for the treatment.
Dowlaishweram	T. Lowe, Esq.	2	0	0	12	0	0	
Guntoor	Dr. G. Bidie	0	0	0	19	1	5·2	
Jackatalla	Dr. G. W. Sparrow	20	0	0	0	0	0	Mercurials also used.
Kamptee	M. W. Murphy, Esq.	23	2	8·6	0	0	0	The fatal cases complicated with hepatic abscess.
Do.	W. W. Rawes, Esq.	0	0	0	2	0	0	
Do.	Dr. J. Kennedy	9	*1	11·1	0	0	0	* Symptoms of the ulceration of the bowels existed before the treatment commenced.
Labuan	J. Fraser, Esq., M. B.	0	0	0	3	0	0	

Table showing the results of treatment of Acute Dysentery by large doses of Ipecacuanha—(Continued.)

Station.	Name of Medical Officer treating the cases.	EUROPEANS.			NATIVES.			Remarks.
		Treated.	Died.	Percentage of Mortality to Admissions	Treated.	Died.	Percentage of Mortality to Admissions	
Madras, 1858-59	J. Mee, Esq.	36	0	0	0	0	0	
Do. 1859-60	Do.	23	0	0	0	0	0	
Do.	A. Blacklock, Esq.	10	0	0	0	0	0	Dr. Blacklock's paper will be published *in extenso* hereafter.
Do.	Dr. Mudge	0	0	0	63	0	0	
Moulmain	J. McDonald, Esq.	1	0	0	0	0	0	
Ootacamund	G. Mackay, Esq., M. D.	0	0	0	3	0	0	
Palaveram	W. R. Cockerill, Esq.	5	0	0	10	0	0	
Penang	W. H. S. Burn, Esq.	0	0	0	8	0	0	Other remedies were used during convalescence.
Rangoon	Dr. D. Campbell	0	0	0	4	0	0	
Samulcottah	James Donaldson, Esq.	0	0	0	4	0	0	
Shouygheen	J. J. Heffernan, Esq.	1	0	0	*8	1	12·5	* Natives of India.
Do.	Do	0	0	0	*9	3	33·3	* Burmese in Jail.
St. Tho.'s Mount.	Dr. C. Currie	13	0	0	0	0	0	
Do.	M. Rogers, Esq.	15	0	0	0	0	0	
Thyetmyo	J. L. Ranking, Esq.	3	*1	33·3	0	0	0	* Ill 12 days before treatment began. Habits intemperate.
Do.	J. Henderson, Esq.	0	0	0	4	0	0	[Symptoms of delirium tremens before death.
Tonghoo	Dr. J. Pringle	0	0	0	26	0	0	
Do.	Dr. W. Farquhar	8	0	0	0	0	0	
Trichinopoly	R. P. Linton, Esq.	0	0	0	2	0	0	
Vizagapatam	Dr. C. J. Smith	2	0	0	0	0	0	
	Total	297	4	1·3	218	8	3·6	

EXTRACTS FROM OFFICIAL REPORTS.

Report on the treatment of Dysentery, by large doses of Ipecacuanha. By Surgeon Major J. ARTHUR, M.D.

"Few diseases in the history of medicine have received a larger share of the attention of medical writers, either in ancient or modern times, than dysentery. It prevailed in an epidemic form in the early ages of the world, and the illustrious Father of Medicine did not fail to observe the order and progress of its symptoms, and to investigate its causes and pathology as far as the limited extent of his knowledge of physiology and anatomy, and the prejudices of the age would permit. Celsus, Aretæus, Galen and the Arabian physicians, treat of dysentery, which they attributed to ulceration of the intestines; and they show by their writings, that they were acquainted with some of its complications,—especially with functional and organic disease of the liver. Galen even distinguishes some of its varieties, and evinces an intimate knowledge of their phenomena. The Arabians of the middle ages derived most of their knowledge of anatomy, and of diseases and their treatment, from the early Greek and Roman writers; their works, indeed, are little more than transcripts from the Greek, neither remarkable for originality, nor for new and improved modes of practice. Although skilful practitioners and observers, yet they did not contribute largely to the extension of medical science, excepting in chemisty and pharmacy, in which they excelled. One of them (Avenzoar) records, that he suffered from dysentery, which he cured by means of an emerald worn over the bowels, and recommends it to be taken internally in similar cases, in powder, in doses of six grains. From the sixteenth century, in which the writings of Fernel threw so much light on the nature and treatment of dysentery, until the commencement of the present century, but little advancement was made either as regards the knowledge of its pathology or cure.

"Great and manifold as the powers of medicines confessedly are, they are limited, and they do not unfrequently fail to effect a cure even when directed by the greatest skill and experience. Dysentery, like all formidable and malignant diseases, often proceeds to a fatal termination uncontrolled by the most energetic remedial measures. That the treatment should be changed as our knowledge of the nature and relations of a disease increases, is consistent with the true principles of philosophy. It is obvious, however, that many

of the innumerable methods of treatment recorded in the history of dysentery have originated in empiricism and false hypotheses, and that they do not rest on an advancing and sounder pathology. It is no less curious than instructive to observe how rapidly some modes of treatment acquired a high reputation for success; how, after a longer or shorter period, they fell into disrepute and were abandoned; and again how accident, or a higher appreciation of their value, led to their revival either in their former integrity or in a modified form. The treatment of dysentery by large doses of ipecacuanha, has been no exception to this law. It has had its period of triumph, of abandonment, and of revival. Since ipecacuanha was first employed in the treatment of dysentery in India, its dose has varied, but it has probably never been entirely excluded from practice. In the course of last year, Mr. Docker, Surgeon of the 7th Royal Fusiliers, published in the 'Lancet' the result of his treatment of some cases of dysentery by large doses of ipecacuanha, and since that time several medical officers in this Presidency have returned to the old mode of practice, for, in fact, it was the original mode of administering ipecacuanha in dysentery.

* * * * * *

"More than thirty years ago, Mr. Annesley (the Author of the celebrated work on the Diseases of India) introduced an opposite method of treatment, which is still known as the routine system of treating dysentery by large doses of calomel, but which, in a great measure, has fallen into disuse. It consists chiefly of giving a scruple of calomel at night, and a purgative the following morning during the acute stage of dysentery. 'The cathartic draught, which seems to be the best suited to procure the full discharge of the vitiated secretions, after the exhibition of the calomel on the previous night, consists of the infusion of senna with salts and the tartarised antimony.' This plan of treatment was considered by its author as not only the most appropriate to dysentery, but also to fevers and hepatitis; and when he wrote, he states, that he had 'followed it for upwards of eight years, and in no instance have I had reason to be dissatisfied with its effects.' It is based on a somewhat singular hypothesis, viz., that in the acute stages of dysentery and fever, the mucous membrane of the intestinal canal is covered with a 'tenacious mucous secretion,' which in the duodenum, covers and obstructs the orifices of the biliary and pancreatic ducts, and thereby arrests the flow of their con-

tents; and that the calomel 'acts chemically upon the mucous secretion, and mechanically as respects the ducts; that it attenuates, changes, and detaches the mucous secretions from the surfaces to which they adhere,' and thus prepares them to be carried off by the purgative the next morning. The large dose of calomel was also intended to act as a sedative and to allay the irritation of the stomach. He adduces some experiments which he performed on dogs, in support of his theory of the action of calomel on the mucous membrane of the intestines. He administered large doses of calomel to dogs, and having killed them within a certain time, he observed the effects of the calomel on the mucous membrane, which he found to be paler than normal in the stomach and duodenum, and to be more vascular and excited than natural in the large intestines. These experiments have since been confirmed, and it has been proved to demonstration, that although large doses of calomel reduce irritability and vascularity of the stomach and duodenum, that they cause irritation, vascularity and griping in the mucous membrane of the large intestines. It is somewhat difficult to conceive that, in the then comparatively advanced state of medical science, a man of Annesley's abilities, great powers of observation, and professional knowledge and experience, should have formed and maintained such a fallacious and untenable theory, and on such insufficient grounds. The 'abundant discharges of tenacious and morbid matters from the bowels,' to which he attached so much importance, were doubtless, in a great measure, produced by the large doses of calomel, and the purgatives which he himself had administered. Injustice must not be done to Mr. Annesley, however, by inferring that his object in giving large doses of calomel was to salivate the patient, for such a result he carefully guarded against. The calomel was intended to act locally. When he wished to affect the constitution he gave calomel in small and repeated doses. But the mental bias, and how he deceived himself with respect to the theory of the nature and treatment of dysentery, are probably best explained by himself in his introductory remarks to the discussion on this very subject, although not intended to have a personal application. 'The prejudices of early instruction are difficult to be overcome, they lead us to draw conclusions from inadequate premises, and sometimes to reject useful inferences, because they accord not with preconceived or generally admitted opinions.'

"Having made these remarks, chiefly of a historical kind,

respecting the history and treatment of dysentery, I shall now proceed to relate briefly the results of my own experience in the treatment of that disease with half drachm doses of ipecacuanha.

"I confess, that when I commenced to employ such heroic doses of such a powerful medicine repeatedly in the course of the day, in weak and exhausted patients, I watched its effects with much anxiety and apprehension. There was one severe case in particular that had been a considerable time under the ordinary mode of treatment; the patient had become weak and emaciated, and all who saw him thought his case hopeless. As a last resort I resolved to try ipecacuanha in half drachm doses, and I continued it for two days at intervals of four or five hours. Each dose caused vomiting, but the patient bore it tolerably well, and its good effects soon became manifest. The evacuations became feculent and less frequent, and mucus and blood ceased; the thirst began to subside; the pulse too become less irritable, slower and fuller; and sleep to return gradually. The patient ultimately recovered, and I attributed his recovery to the ipecacuanha. This case tended no less to increase confidence in the efficacy of large doses of the medicine, than to show that they might be given with safety in cases of debility. It must not be supposed, however, that it acts like a charm in all cases, and that the patient is thoroughly cured by a few doses. If the disease comes under treatment in the first or simple inflammatory stage, or even during the second or stage of deposition, or exudation into the submucous tissue, the cure will be rapidly effected, if the ipecacuanha be given boldly, and continued until the motions become feculent, the thirst abate, and sleep begin to return. If, however, the disease has progressed further, and has passed into the stage of ulceration, and of softening and degeneration of the exudation, before it comes under treatment, the cure will be more tedious, and the ipecacuanha will have to be omitted, during the stage of cicatrization or repair, as soon as it has arrested the progress of the malady, as evinced by the evacuations being feculent, and nearly destitute of blood and mucous, and by the sleeplessness and thirst decreasing. This mode of treatment seems to be hardly less powerful in arresting the progress of the disease, in its chronic than in its acute form, (whether in adults or children) when due allowance is made for the difference of pathological conditions."

"The first favourable indications in all cases, then, are the cessation of the griping and tenesmus, the evacuations becoming feculent and containing little blood and mucus, and the diminution of thirst, frequency of the pulse, and sleeplessness. When these have been established, I omit the ipecacuanha and complete the cure by other means. In the first place, I generally give three or four grains of blue pill, and one or two grains of opium once or twice daily according to circumstances, to correct the depraved biliary and intestinal secretions, and to lessen the number of evacuations. Afterwards the nitro-hydrochloric acids, or the sulphuric, in combination with tincture of opium may be given two or three times daily, if the patient is weak and emaciated, but they are seldom well borne during the process of repair, the mucous membrane being still in an irritable state, and a relapse being readily produced by an error in treatment or diet. Quinine or sulphate of copper or zinc might be tolerated, but preparations of iron generally cause mischief. I now trust more to a suitable diet than to much tonic medicine during convalescence.

"I invariably employ auxiliary measures, if necessary, during the exhibition of ipecacuanha. When tenesmus is distressing, leeches are applied freely to the anus. If there is much pain or fulness in the cœcal region they are applied there. Fomentation to the abdomen is almost always useful. The warm bath is frequently beneficial. An anodyne enema is administered occasionally when the purging is severe and distressing. Venesection is seldom or never necessary in the treatment of dysentery in the plains in the south of India, excepting, perhaps, in the case of a robust and plethoric recruit. All these remedies, however, are strictly regarded as auxiliaries, and are employed to aid the ipecacuanha, on which the principal reliance is placed. When complications exist, they are treated in the usual way.

"With respect to the mode of administering ipecacuanha. At first I gave twenty-five minims of tincture of opium, followed in a quarter of an hour by half a drachm of ipecacuanha in an ounce and half of water. For some time I have omitted the tincture of opium, and have given the ipecacuanha at once, which is repeated every four or five hours during the day according to the severity of the case. Seldom more than four doses are given daily. It is discontinued in the night, and resumed the following morning.

In recent cases the disease generally begins to yield in one or two days, and the medicine is then given at longer intervals. When the favorable symptoms above described appear (indications decidedly indicative of the progress of the inflammatory action, or of ulceration having been arrested), the ipecacuanha is omitted, and the after treatment already mentioned is substituted. The state of the bowels and of the secretions is carefully attended to during convalescence, but few tonics or astringents are given. The latter are of very questionable efficacy in such cases, in my opinion, and nourishment can be far more effectually and safely conveyed to the system in the form of diet than in that of medicine.

"Partial relapses (arising chiefly from errors in diet) are not of unfrequent occurrence during convalescence from chronic cases of dysentery. A few doses of ipecacuanha are generally sufficient to remove the offending matter, and to arrest them.

"Most of the established methods of treating dysentery demand a very formal sort of introduction, such as calomel at night and oil the next morning, showing plainly how difficult it is to get rid of old theoretical and empirical notions, and to be governed and directed by more rational and inductive principles. The ipecacuanha plan may be commenced with abruptly, and at once without any preparatory treatment. It is not to be concluded, however, that it may be adopted indiscriminately, and conducted without due care and attention, for the operation of ipecacuanha, like that of every powerful medicine, requires to be carefully watched, and its effects duly weighed. On some constitutions it produces powerfully depressing and exhausting effects, and if continued too long the patient would sink under it. As little food can be taken during its active administration, I generally give an ounce of wine in a little thin sago or arrowroot two or three times daily, to relieve the feeling of sinking and exhaustion. Some constitutions, from peculiar idiosyncracy, are so susceptible of the action of ipecacuanha, as to be unable to tolerate it from the persistent vomiting and gastric irritation which it produces. Such cases are rare and exceptional, but when they do occur the remedy must be abandoned.

"What is the action of ipecacuanha in the cure of dysentery? My remarks in reply to this question must be chiefly of a speculative nature, though founded on experience. It

would be presumptuous and unwarrantable to generalize largely from a limited induction of cases. It will be admitted, that, in large doses, ipecacuanha acts as an emetic, laxative, and sudorific, and also that it produces a powerful impression on the organic system of nerves, and through that system on the vascular system. It thus exerts a powerfully derivative action on the larger intestines. During its emetic operation,—while the system is overpowered by sickness, the cutaneous system relaxed, the blood driven from the internal parts to the surface, the force of the vascular system lowered through the influence of the organic system of nerves, and the inflamed or ulcerated mucous membrane relieved from the contact of irritating fæcal matters and morbid secretions by the laxative operation of the remedy, the congested condition of the large intestines is diminished, and by successive repetitions of these combined actions a powerful and permanent impression is made on the disease. All these effects bear directly or indirectly upon the diseased intestine, and I am convinced that the efficacy of ipecacuanha in the cure of dysentery depends on them as a whole, and not upon nausea alone, nor upon its diaphoretic effects, or purgative effects alone. Cullen, Sir John Pringle, and other high authorities, believed it was due to its purgative properties, and to dissent from the opinions of such men, seems something like presumption, if not professional treason. That its laxative effects supersede the use of purgatives, and therefore perform an important part in the cure, there can be no doubt. That ipecacuanha possesses any specific virtue in the cure of dysentery, analogous to that of quinine in fever, remains to be proved, though it is well known that it produces a peculiar effect on mucous membrane. Almost all writers on the employment of ipecacuanha in dysentery seem to consider vomiting as injurious, and to be avoided if possible. This I venture to think is a mistaken opinion. I believe that vomiting is attended with the most salutary effects in the treatment of dysentery, and that without it, ipecacuanha would lose half its efficacy. In fact it has often appeared to me, that the principal difference between large and small doses in the treatment of dysentery, consists in free vomiting. Hence I now give no tincture of opium before nor in combination with each dose of ipecacuanha, as I believe some do in order to prevent vomiting. The vomiting and nausea render it repugnant and highly unpopular, and no little difficulty is experienced

occasionally in persuading patients to continue its use. In most parts of India such violent and malignant cases of dysentery as occurred in the regiment in Burmah, are not very often met with, in order fully to test the efficacy of this plan of treatment; but I have employed it in severe cases here, as I shall show in the sequel and with uniform success. There have been no fatal cases of dysentery in the Fusiliers since I commenced to practice it. It appears to be as applicable to the treatment of dysentery and diarrhœa in children as in adults."

M. Rogers, Esq., *Artillery, Bangalore.*

"I have hitherto never lost a single patient from dysentery since I adopted the use of large doses of ipecacuanha in its treatment. I now generally give at the commencement, to a man, grs. xxxv. of ipecacuanha pulv., preceded by the anodyne, and seldom find it necessary to repeat it oftener than twice or thrice. It arrests the discharge of blood and mucus almost immediately, and relieves the tenesmus; as soon as the blood and slime disappear from the evacuations, I omit the ipecacuanha, and the remaining diarrhœa, if there is any, I treat in the usual way."

W. Johnstone, Esq., M.D., 30*th Regt. N. I., Bellary.*

"I beg to submit a brief notice of my experience of the treatment of dysentery, by large doses of ipecacuanha, gathered while in charge of a temporary depôt at Masulipatam, where for nearly a year about 130 sick and convalescent European soldiers from the crowded hospitals at Secunderabad, passed under treatment. Of dysentery, many cases occurred however, in which the use of ipecacuanha in large doses was clearly contra-indicated; chronic in their nature, and clearly dependent on visceral changes, either intestinal or hepatic, the ipecacuanha treatment, I repeat, was wholly inadmissible. But though the circle was thus narrowed in which I employed this form of treatment, I am far from wishing to disparage its efficacy in cases not opposed by existing pathological conditions to its employment. It is in cases then of the more acute form of idiopathic dysentery, or even in those consecutive on recent hepatic lesion, that the utility of ipecacuanha in the form prescribed in the circular is so pleasingly illustrated, elevating this agent to the rank of a "specific" in dysentery, equally with colchicum in gout, or mercury in syphilis.

"Briefly to record the results of my observations in the treatment of dysentery by large doses of ipecacuanha, I have found,

"1st. That very soon, often within two or three hours of the commencement of the treatment, the course of the disease is arrested.

"2nd. That depletive means, equally with the use of that pestilent mineral mercury, are wholly unnecessary.

"3rd. That while the general health of the patient so treated is little, if at all, impaired, convalescence is remarkably abridged."

W. S. MURRAY, Esq., M. B., *H. M.'s 66th Regt., Cannanore.*

"The treatment of acute dysentery by large and frequent doses of ipecacuanha, has had a full trial, and the following information proves with how much satisfaction, but at the same time this medicine is not at this station, of itself sufficient in most cases for a cure. At the head-quarters of the Regiment, 58 cases of acute dysentery have been treated in this way, and in 21 of them ipecacuanha alone was sufficient for the cure; in 34, other remedies were necessary before the cure was established, and the remaining three became chronic, notwithstanding treatment. In the first class of cases, viz., those treated by ipecacuanha alone, the cure was always more rapid and the convalescence less tedious than in the others, and this medicine seems to me most suited to those cases in which the phlogistic or inflammatory tendency is most marked."

C. A. ANDREWS, Esq., *in Medical charge, Chicacole.*

"During the short period (six months) that I have held charge of this station, dysentery has not been prevalent, and I have only eight cases to record, all of which were treated by large doses of ipecacuanha, but the result of these few cases has been sufficient to convince me that ipecacuanha given in large doses, is the most valuable remedy yet discovered in the treatment of this disease."

E. E. LLOYD, Esq., *Civil Surgeon, Coconada.*

"If an opinion can be formed on such a small number as those given below, I am inclined to look upon it with a favourable view, for it was evidently successful in four cases out of five treated, the unsuccessful case was one of long standing—the patient having been suffering severely for upwards of a week before I saw him; but as he refused to continue

that mode of treatment from the distress it occasioned, it may be scarcely fair to call it unsuccessful, though it strikes me he was under it long enough to find that he was not obtaining any benefit therefrom. The number of patients treated on the above plan, all Europeans, was five, of which three were in hospital, and two private patients: of the hospital patients all recovered, of the private one recovered, the other refused to continue the remedy on account of the excessive vomiting produced.

"In four out of the five cases no other remedy was employed, the convalescence after which treatment I am persuaded took place at an earlier period as compared with that under the usual course adopted by me."

Francis Day, Esq., *Civil Surgeon, Cochin.*

"I have the honour to enclose a roll of 31 cases of dysentery, treated by large doses of ipecacuanha, but I would remark that in the Rajah's Hospital and amongst other individuals not Dispensary patients, I have either personally or by my subordinates tried it in about 40 more cases. I have arranged the patients under three heads. 1. In patients amongst whom the result could be easily observed. 2. Out patients divisible into those who returned after commencing this treatment, and those who did not. Amongst these none died within the limits of British Cochin, and I conclude most of them were cured by the remedy. I could increase this list by about 20 more instances, but consider those given are sufficient.

"It has seemed to me that the class of cases for which this treatment is most adapted, are those of acute uncomplicated dysentery, especially such as in the case of the European sailor mentioned (No. 18), that the more chronic the disease, the less beneficial results are to be anticipated, and that Europeans are more likely to be benefited than natives."

T. Croudace, Esq., *43rd Regiment N. I., Cuttack.*

"I have had one case (of dysentery) in a European, and in this the ipecacuanha in 3 j. dose was given with success, the disease was cut short, and the patient convalesced on the fifth day.

"I have given this mode of treatment a trial also in several cases in the Civil Dispensary, and have been much pleased with the result, in general the disease is arrested after three or four doses of 3 j. each, and sometimes after the 2nd or 3rd.

If given in the manner prescribed by Surgeons Docker and Rogers, *i. e.*, preceded by Tinct. Opii, and sometimes by a sinapism to the epigastrium, it is usually retained, or if emesis is produced, this does not generally occur for some two or three hours after taking it, and the vomiting does not appear to interfere with the beneficial effects of the remedy. I now treat all cases of dysentery in this way, and with more success than by the plan hitherto in use, and convalescence occurs in a much shorter time. I have also observed what Surgeon Rogers has pointed out, that it does not debilitate the patient. In conclusion I consider this mode of treatment well worthy of more extensive trial. The dose that I usually give is ʒ j. and sometimes ʒ j.ss., and this I think has not in general caused more sickness than a smaller dose, in fact I have seen ʒ j.ss. retained after vomiting had followed a dose of one drachm."

T. Lowe, Esq., *Sappers and Miners, Dowlaishweram.*

"The number of patients treated by me up to this time, according to the plan recommended for trial, is but small, viz., fourteen, yet upon such data I am of opinion that the method is not only a safe and speedy one, but also free from many of the evils attendant upon other courses of treatment, and especially to be recommended in a climate like India—notorious for its aplastic and debilitating influences upon the constitution.

"Each case recovered under this treatment, though in no case were there any *very* severe symptoms, nor any complication of organic derangement of other viscera, the functional derangement of both liver and kidneys, so often observed in this distressing malady, appeared in each instance under my notice to be speedily changed for the better.

"No other remedies were employed save in my own case and that of J. Evans of the Public Works Department. In my own case I had suffered with more or less intensity for five days, and felt but little relieved by the usual alterative treatment, although *nausea* had been induced by ordinary doses of ipecacuanha, and kept up for three days; I then took two *scruple* doses of ipecacuanha, repeated emesis followed, accompanied by profuse diaphoresis, and a total cessation to the dysenteric symptoms for two days, a slight relapse on the third day after the powder had been taken occurred, and again yielded to the peculiar powers of this root. Tardy convalescence followed. J. Evans was

admitted into hospital three times for a similar dysenteric disorder, for the first attack he was treated by the large doses, and convalesced after two powders of ipecacuanha, preceded by tinct. opii. had been given. In his subsequent admissions for this disease, he was treated by large doses, and afterwards by alterative tonics.

"My experience of this treatment of dysentery gives a period of little over three days as an average for convalescence. Certainly a marked diminution when compared with cases treated in a different way.

"In extenso, permit me to state that from each case in which I have watched its operation, I believe I am justified in concluding that ipecacuanha acts as an anti-spasmodic, and sedative to the alimentary canal primarily, and as a diaphoretic by its secondary re-action upon the cutaneous system of capillaries. I am inclined to attribute its specific action upon the alimentary canal to the sedative effects upon the system of sympathetic nerves, whereby an anti-peristaltic action of the intestines is effected and irritation quelled, while it specially influences the secreting organs, in promoting their activity, and thus by a double action leading to the cessation of peristaltic motion, constantly observed to follow its exhibition, and to the secondary effect of a painless well tinted fecal evacuation.

In my own case, and in others observed by me, a much increased secretion of saliva followed its use, and this is one of the patent effects which doubtless pertains to the whole system of gastro-intestinal glands, under the influence of this remedy. Relaxation of the muscular parietes and vessels of the alimentary canal naturally follows, and as in cases of highly irritable and congested bronchial affections, the congested mucous membrane of the alimentary canal is unloaded, its natural secretions are re-established, and the parts involved in disease return to their natural condition. In this result it appears to me to act as a peculiar and special evacuant, although not as a purgative as Cullen thought.

"The appearance of blood in the stools vanishes as by a charm, and I believe the cessation of this intestinal hæmorrhage, so invariable a concomitant, to be due perhaps, as much to the systemic revulsion and sinking syncopal effect induced by this medicine, exhibited in large doses, as that of the cessation of uterine hæmorrhage, induced by syncope. In my own case, and in all treated by me, every appearance of blood in the evacuations, vanished after the first dose of

ipecacuanha, and the therapeutic effects above mentioned were experienced.

"In simple acute dysentery, induced by sudden chills, mal-assimilation of food, deficient secretion of biliary and pancreatic fluids, the result of congestion and atony of those glands, I believe the treatment by large doses of ipecacuanha preceded by a full dose of opium to be as judicious and as much to be recommended as the treatment of intermittent fever by large doses of quinine. It appears to me to cut short an acute attack of dysentery with as much certainty and power as a large dose of quinine does that of jungle fever, and while we simply confine ourselves to this *anti-dysenteric* weapon, we can have no fears that we are injuring other material elements of the body, as too frequently is the case when mercury and other powerful metallic alteratives are employed."

G. Bidie, Esq., M.B., *Civil Surgeon, Guntoor.*

"I have found no remedy so efficacious as ipecacuanha. Compared with other therapeutical agents it may be characterized as safe, certain, and speedy in its curative effects; and if a case of dysentery under the ipecacuanha treatment, does not in a few days shew symptoms of improvement, I think an unfavourable prognosis is but two often likely to prove true."

G. W. Sparrow, Esq., *H. M.'s 60th Rifles, Jackatalla.*

"Although dysentery has never appeared as an epidemic in the Battalion, still some cases have been under treatment, a tabular statement of which is enclosed. The whole of these had large doses of ipecacuanha administered, but each in combination with a mercurial, and although I am an advocate for this plan of treatment, still I am inclined to believe that the remedy administered without some mercurial preparation would be inert, as the experience of my practice in this disease, more particularly in this country, leads me to believe that the liver is at all times in a disorganized state. I have had two or three cases under treatment, which admitted of a fair trial of this therapeutic, in the first instance, and no perceptible change took place until mercury was combined."

J. Kennedy, Esq., M.D., *Madras Artillery, Kamptee.*

"Though other remedies were employed both before and after the administration of the large doses of ipecacuanha, I

consider that in the eight successful cases the arrest of the disease was solely due to the influence of the ipecacuanha. Generally after the second dose the evacuations became healthy and less frequent, and the more urgent symptoms abated, none of the cases required more than seven or eight doses. On commencing with the remedy 20 grains preceded by a dose of tincture of opium were given, and the same repeated five or six hours afterwards. After the second dose the quantity of ipecacuanha was reduced to ten grains. I think it necessary to state that in the fatal case only three large doses of the ipecacuanha were administered—the continuation of the medicine having been deemed inadmissible, owing to the extreme sinking which it produced. I may add that in this case there was some reason to suspect that ulceration of the bowel had existed at the time of admission.

"I believe this mode of treatment in dysentery to be most efficacious but only in the early stage of the disease, and before any decided structural change of the colon has taken place.

"Of those successfully treated two patients were discharged from hospital six days after the ipecacuanha treatment, two more were discharged after seven and eleven days respectively. The other four cases occurred in the D troop Horse Artillery, which has recently left this station. From want of the records I cannot give the exact period of convalescence, but I distinctly remember that it was short, and in no instance exceeded twelve or fourteen days."

M. W. Murphy, Esq., *H. M.'s 91st Regt., Kamptee.*

"I used the large (ʒ j. and ss.) doses of ipecacuanha, in the hospital of H. M.'s 91st Regiment, in 25 cases, out of the number 23 recovered, and two died, the two fatal cases being complicated with hepatic disease, and hepatic abscess being present on *post mortem* examination.

In all the cases other remedies were used. As the cases in which the ipecacuanha was administered were severe, the convalescence was tedious, but I am unable to say that any difference existed in the convalescence between those subjected to the ipecacuanha and those treated by other means."

Extract from Report for quarter ending 30th Sept. 1859.

"In the treatment of dysentery during the quarter, frequent use has been made of the large (half drachm) doses of ipecacuanha, and after a more extended experience of it,

I can state that it has proved very beneficial in many cases, altering in several severe cases, in a remarkable degree, the character of the discharges and allaying irritation. I am not disposed to assign to it the position Mr. Docker does, viz., that there is no case of dysentery in which it does not prove valuable, but I consider that in the early stage of uncomplicated dysentery before ulceration has taken place, and where hyperomia of the mucous membrane is present only, that it acts most advantageously. I have found the best mode of administering it, to be made up into pills, a draught containing chloric æther and tinct. opii. having been given previously, and the patient cautioned against taking any quantity of fluid after the pills.

"I have also usually applied a mustard plaister to the epigastrium before giving the ipecacuanha."

J. T. Fraser, Esq., M.B., *in charge of details, Labuan.*

"Acute dysentery is a disease rarely seen in Labuan, at any rate during the last year, I have only had three cases, and one of these was complicated with fever, occurring in an elderly sepoy of the Artillery, who was at the time undergoing confinement. He was admitted to hospital complaining of the usual symptoms of dysentery, and was immediately given 30 minims of laudanum, followed up in half an hour by pulv. ipecacuanha ʒ ss.; these doses were repeated three or four times a day and the ipecacuanha increased to ʒ ii. on the second day. On the fourth day the dejections were feculent and copious, from which time all dysenteric symptoms disappeared, but diarrhœa supervened, as many as 16 white semi-feculent motions being passed in 24 hours, the ipecacuanha was consequently discontinued, as he suffered from almost constant hiccough, blue pill and opium given three times a day with chalk mixture, checked the diarrhœa considerably; but it was found that he had habituated himself to the use of narcotics for some years, and ʒ i. doses of laudanum, with five grain doses of acetas plumbi, were found necessary to completely check the discharge. He then suffered from fever, from which time he continued to labour under alternate attacks of fever and diarrhœa, with extreme debility, much gastric irritation, hiccough, etc., under which he sank and died. In this case the ipecacuanha unquestionably cured the purely dysenteric symptoms, but failed to induce healthy evacuations—a result however not to be wondered at considering the complications.

"The 2nd case, also an Artilleryman, was quite successful, the doses were given three times a day, with immediate relief, feculent dejections resulted on the third day, and he was sent to duty on the sixth day after admission. This patient had taken half an ounce of castor oil with half a drachm of laudanum on the day before admission.

"The 3rd case was that of a bellows boy aged 17, the ipecacuanhâ was given in doses of ʒ ss.; on the 2nd day he was much relieved, but had a slight relapse on the 3rd, probably owing to some indiscretion in diet, or exposure to the cold night winds, which often come on suddenly in Labuan. On the 7th day he was nearly well, the ipecacuanha reduced to one dose a day, and on the 9th he returned to duty, cured.

"Such is the meagre report I am able to furnish as to the results of the remedy in dysentery, but I am happy to be able to testify to the important results obtained from it, in the treatment of a peculiarly fatal form of diarrhœa prevalent at times in Labuan, when the mucous membrane of the small intestines seems primarily affected, copious, loose, semi-digested feculent evacuations, accompanied with tormina, and as time progresses and the intestines become emptied, the disease extends lower down, considerable tenesmus, with frequent scanty, slimy evacuations, sometimes tinged with blood result. In these cases the opium besides enabling the ipecacuanha to be retained relieves tormina and tenesmus, whilst the ipecacuanha relaxes the sub-acutely inflamed mucous membrane and derivates powerfully to the skin. Of these cases six have occurred in the military hospital (entered as dysentery), but so complicated and connected with fever as to deprive them of much of their interest; but in May and June last I had charge of the Chinese convicts, amongst whom eight cases came under my observation: in the two first I employed a small dose of castor oil with laudanum, calomel with opium, acetate of lead with opium, chalk mixture with ipecacuanha (in five grain doses every second hour), but both died; one was complicated with extensive prolapsus of the rectum, which was not reported to me until too late: in the rest I used the laudanum and ℈ ii. doses of ipecacuanha, and *all* recovered; no other remedies were employed, and the patients were convalescent in from five to ten days. No record being kept in the Colonial Department, I am only able to state on the authority of the hospital attendant and the former colonial Apothecary, that previous to these six recoveries, every case *had died* to the

number of 16 or more, and that ipecacuanha was never used.

"In administering ipecacuanha in large doses, I have generally found the first two or three doses rejected; but after that "tolerance is established," even without repeating the previous dose of laudanum. I may add that for several years, and more particularly since coming to India, I have been in the habit of prescribing from three to five grains of ipecacuanha in each dose of chalk mixture, every two, three, or four hours, in certain forms of diarrhœa, and I find the large doses almost equally well retained by the stomach as the smaller ones."

James Mee, Esq., *H. M. 44th Regiment, Madras.*

"This was the treatment generally pursued from 14th January 1859, viz., on admission 30 drops of tinct. hyoscyamus in an ounce of water was administered, and in an hour 20 grains of ipecacuanha, mixed in as small a quantity of water as possible, and repeated in seven hours. Thus, in 24 hours, 60 grains of ipecacuanha were generally administered.

"The ipecacuanha produced nausea in all the cases ,and in most vomiting, but after the second or third dose it was better retained in the stomach. This plan of treatment was continued for two, and in a few, for three days, when a decided change took place in the alvine discharges. In from 24 to 40 hours, fecula appeared, also a diminution in tenesmus and tormina, together with a subsidence in the constitutional febrile excitement. In some the ipecacuanha was continued for a day or two longer, in doses of 12 to 15 grains, and this treatment has given in all cases satisfaction. There were 36 cases treated on this plan, and all discharged to duty except one, now in a convalescent state. Leeches were not used in any case. On stopping the ipecacuanha, a dose of castor oil was generally used, and with some blue pill and ipecacuanha were used for a few days, infusion gentian with acid nitric dilute was administered with nutritious diet. As before stated, only a few thus treated had looseness of bowels on decline of the dysenteric discharges, and all improved much more favourably than those treated with leeches and blue pill, and their convalescence was less tedious.

"But it must be observed that at the time this treatment was adopted (14th January), there was a decided change in the weather, the monsoon had passed over, and the air was warmer, drier, and more genial; thus I cannot speak with

such confidence on this plan of treatment, as the severest attacks occurred prior to its adoption."

G. Mackay, Esq., M.D., *Medical Officer, Neilgherries.*

"The foregoing cases are examples of the efficacy of large doses of ipecacuanha in dysentery. Though aware that this remedy had proved most useful in the treatment of this disease amongst Europeans, I hesitated to employ it in Natives, particularly as the cases usually admitted into the hospital here, are of a low adynamic type, I feared the depressing effect of the remedy.

"Case No. 1. was brought to hospital supposed to be in a dying state. The patient, a pauper, was weak, emaciated, almost pulseless, from disease, exposure, and starvation. For three days blue pill with acetate of lead and opium were given, but without any beneficial effect. On the fourth day the motions were very frequent, and consisted of nothing but blood and mucus; without much expectation of its doing good, I ordered tinct. opii. ℥ xxv. to be followed in a quarter of an hour by ipecacuanha gr. xxv., from this time he improved, the motions first became less frequent; the ipecacuanha was continued in smaller doses, and the following day the evacuations were quite free from mucus and blood.

"It will be seen that in the other two cases the remedy was equally beneficial. In case No. 2 the dysentery was complicated with slight quotidian intermittent fever requiring the administration of quinine. In both cases the patients being weak, a tonic was given to complete the cure."

R. W. Cockerill, Esq., *in Medical charge, at Palaveram.*

"In all the cases the convalescence appears good, but it is difficult to form an opinion from a journal of another medical man's treatment.

"In my opinion the favourable results recorded would not have been obtained, had not the cases been carefully selected. I do not administer it to any invalided men, or invalids returning from Burmah."

A. Chester, Esq., *Assistant Surgeon, 74th Highlanders, Ramandroog.*

"From the slight experience I have had of this method of treatment, I am of opinion that it is very efficacious as a rule, but I believe that in a very acute case the treatment

may be advantageously commenced by applying some leeches. No deaths occurred."

D. CAMPBELL, Esq., *6th Regiment N. I., Rangoon.*

"The number of patients so treated by me has been but one in the 6th Regiment; and three or four before joining it, to which I can refer only from memory; they all recovered."

H. M. CORBETT, Esq., *H. M. 68th Regiment, Rangoon.*

"Ipecacuanha in powder, is with leeching the main point of treatment, it is often beneficially combined with hyoscyamus and quinine, in small doses frequently repeated, or large doses uncombined. I have used it in v. and viii. grain doses every second hour alone in powder, with great relief; it, in these doses, seldom produces an emetic effect, but often producing nausea, and the tolerance for the drug is well known in this disease; and I think when this drug is not tolerated, it may be owing to the mildness of attack or in course of treatment it may be due to the disease being improved; but as a rule, when ipecacuanha is not tolerated, the state of the liver should be well looked to, the tolerance being much less in inflammation of this organ than in dysentery."

J. L. RANKING, Esq., *Artillery, Rangoon.*

"My experience in the treatment of dysentery by the method advocated by Surgeon Rogers is limited but favourable. I have long been in the habit of using full (20 grs.) doses of the drug in the disease as met with in natives, and provided the first stage, that of simple hyperæmia be not passed, according to my experience, no treatment is so successful. With the European my experience is more limited, and I had not exhibited the preliminary dose of laudanum, in the way, and with the object advanced by Dr. Rogers, prior to the receipt of the paper circulated by the Director General.

"Since then I have had few opportunities of testing the merits of the treatment, but in the few instances in which I have tried it, it has in the earlier stage of the disease proved most successful.

"The preliminary dose of laudanum, enables the stomach to bear the larger dose (30 grs.) preventing vomiting, provided it be taken without fluid, and the patient be directed not to drink anything for at least half an hour before and after

each dose. But it is only in the earlier stage of the disease that this treatment avails. In the second or ulcerated stage it has no controlling power."

J. DONALDSON, Esq., M.D., *1st Extra Regt., Samulcottah.*

"I have the honor to give my experience in the treatment of dysentery by large doses of ipecacuanha, I have no Europeans to deal with, and have had few cases amongst natives, in which I thought it necessary to try the remedy in its new increased dose, for I have never found any difficulty in curing dysentery by the mode I have adopted for the past ten years, viz., beginning with an emetic dose of ipecacuanha, in bad cases, and continuing the medicine in three grain doses every four, three, or two hours according as the urgency of the case demands, and I have never had a fatal case of acute dysentery in either Europeans or Natives.

"All the cases recovered well, no remedy but ipecacuanha was used, except in convalescence such helps as astringents, port wine, rice diet, etc. As these four cases were somewhat more severe than the ordinary cases of dysentery met with amongst the natives of India, I think it scarcely fair to compare them with the others which I treated in the method I have found successful for so many years. Two at least of these men were weakly, and not likely to recover rapidly from such an exhausting disease; they both suffered from chronic diarrhœa subsequently. I scarcely ever had occasion to employ leeches in dysentery. I look upon ipecacuanha given as described at the beginning of this letter, as our "sheet anchor" in this dangerous disease, and I have always found convalescence rapid except in much debilitated constitutions."

Asst. Surg. HEFFERNAN, *Artillery and Details, Shoaygheen.*

"I have treated 18 cases of dysentery with large doses of ipecacuanha (℥ ss. or ℈ i. three times daily) and with the greatest success—all, with the exception of one gunner in C. Co. 4th Battalion, Madras Artillery, were natives of India and this country. Regarding the four fatal cases, all of which took place in the Jail hospital, the immediate cause of death was in the case of the native of India, a secondary abscess of the liver, the other three cases (Burmese) were of a chronic nature, and did not seem to improve under any treatment; however, their symptoms for a time were much

alleviated by enemata of pulv. ipecacuanha, when, indeed, acetate of lead and opium in pill and mixture, tepid water and argenti nitratis enemata, &c., failed to produce the slightest benefit.

"The period of convalescence after ipecacuanha treatment appeared to me to be much shorter than after any other of the different modes of treatment."

C. D. CURRIE, Esq., 1*st Battn. Artillery, St. Thomas' Mount.*

"I have only had an opportunity of trying this practice in 13 cases, and with results the most satisfactory.

"None of the cases, however, were of a severe character, but all of them were decidedly dysenteric. It seems to possess the advantage over other modes of treatment, of arresting the progress of the disease at an early stage, thereby saving the patient from the debility consequent on its prolonged continuance, and preventing its assuming a chronic form."

J. HENDERSON, Esq., M.D., 33*rd Regiment, Thayetmyo.*

"The slight experience I have had of the treatment in question, has been most satisfactory. The ipecacuanha given according to the method recommended, has in every case afforded speedy relief, reducing the inflammatory state of the membrane, relieving tenesmus and strangury, lessening and changing the character of the discharges, promoting diaphoresis, and inducing sleep or quiet repose, the ultimate recovery being likewise apparently hastened."

W. FARQUHAR, Esq., M.D., *Artillery, Tonghoo.*

"In the cases of eight Europeans (one of these a weakly pregnant woman), I have used ipecacuanha alone, in doses of from ℈ i. to ℈ ii., and found that the most urgent symptoms were relieved after a second or third dose. The cure was generally completed by giving doses of five to ten grains three times a day, in combination with as many minims of tincture of opium.

"The convalescence in these cases was much less protracted than with other methods of treatment.

"I have found that two scruple doses cause less nausea than doses of half that quantity.

"The action of the liver appears to be very rapidly and powerfully promoted by the above treatment.

"In several cases of natives I have found ten grain doses

in combination with ten minims of tincture of opium three times a day, effectual in cutting short the disease, when other means had failed to check the discharge or restore the hepatic functions."

H. T. Gordon, Esq., M.D., *H. M.'s 69th Regiment, Tonghoo.*

"Ipecacuanha used after a plan mentioned as having been very successfully employed at this station by Dr. Forbes, 2nd E. L. I., has been found to exercise more influence over the disease than any other remedy; it is administered after a turpentine stupe, or the application of a sinapism to the abdomen, in a dose of from grs. x. ad grs. xv., in combination with tinct. opii. gt. xx., and just sufficient water to form a vehicle, repeated three or four times a day. It is also administered as an enema in a small quantity of starch, one scruple to half a drachm of ipecacuanha, with one drachm of tincture of opium; counter-irritants to the abdomen, with farinaceous and milk diet, are also used to assist in the cure of the disease."

B. H. Hooke, Esq., *in Medical Charge of the Artillery, Tonghoo.*

"The largest number of admissions into hospital have been cases of dysentery; and as regards the treatment of this disease, I am only the more convinced by twelve months' more experience, that the ipecacuanha is one of the best and safest remedies we can employ. In addition to what I said last year, regarding the benefit of the use of ipecacuanha, I have only to supply an omission there inadvertently made, viz., that in this disease and in large doses, it acts most beneficially in restoring the normal quantity and quality of the bilious secretion; for it generally happens that the first motions are of a whitish colour, whether these be in the form of scybalæ, or not, and that after a few days they gradually change to a lightish brown which can alone be attributed to the medicinal action of this drug, on the organ appropriated for the secretion of bile. The only caution that my limited experience would lead me to suggest, in the use of ipecacuanha, is not to push it too far, in the old and debilitated, or in those long resident in India; if you do, it will be found necessary to give wine, which is always better avoided if possible. In these cases I depend upon enemata night and morning, of ipecacuanha, as it has not nearly so depressing an effect in this

way, as when given by the mouth ; and so far as I have been enabled to judge, acts nearly as well. I have never in any one single instance found a difficulty in subduing the most urgent symptoms in acute dysentery with the above treatment ; the skin and tongue which are usually dry, become moist, the pulse is lowered, the griping and tormina cease, and the straining at stool is lessened, if not entirely removed, and in the course of a week the patient is quite well. I cannot, however, speak so confidently when the disease assumes a chronic form, when we have a thickened condition of the colon, with ulceration. It is in these cases I have met with almost insuperable difficulties."

J. PRINGLE, Esq., M.D., *2nd Regiment N. I., Tonghoo.*

"Appended is an analysis of 26 cases of dysentery, treated during 1859-60, with ipecacuanha, in larger or smaller doses, as suggested in circular No. 611 of 1859, all of which were discharged from hospital cured. It must be premised that the general character of the disease was subacute or asthenic, and pyrexia as a symptom has not been prominently noticed. The special treatment in most of the cases was preceded by a dose of castor oil with laudanum, to which frequently ipecacuanha wine was added. During the action of this aperient, the motions in general presented an improved appearance, but gradually re-assumed their distinctive dysenteric character; ipecacuanha was then given in doses varying from 10 to 20 grs., three or four times in the 24 hours after the exhibition of twenty minims of tincture of opium in some simple vehicle with the first dose. In many cases the dysenteric symptoms might be said to have ceased after three or four doses of ipecacuanha, in the remaining a great improvement was at once perceptible, the motions becoming partly feculent and the quantity of blood and slimy mucus much diminished. In several of these last cases the persistence of the disease was observable alone in the few drops of slimy blood, which appeared to have been subsequently evacuated over the feculent stool, an appearance particularly characteristic after the above special treatment. Abdominal pain and tenesmus were speedily alleviated, but in chronic cases the latter symptom frequently alone remained after the disease had disappeared ; a few leeches in the severer cases with hot water or starch enemata, were beneficial with the first doses of ipecacuanha.

"Relapses are noted in several cases. In them the origi-

nal treatment was adopted—the ipecacuanha being in increased doses. Vomiting and nausea proved troublesome in two cases in No. 12 especially; the only case in which a blister was found necessary.

"Ipecacuanaha in 10 or 15 grains with as much Dover's powder (or in smaller proportions) seemed to be indicated in cases where the skin was dry and rough, and acted beneficially. Several cases of hepatic and splenic disease are noticed as complications, in these the specific action of ipecacuanha was considerably modified, but the dysenteric symptoms in every instance yielded, although a tendency to subsequent diarrhœa remained in some cases.

"The foregoing observations verify the results adverted to in the above circular, and prove further the applicability of the remedy as special in cases of uncomplicated dysentery as the disease occurs in the Native army."

J. Maitland, Esq., M.D., *2nd E. L. I., Trichinopoly.*

"Since my attention was first called, about 18 months ago, to the effects of ipecacuanha in large doses, every case of dysentery, or acute diarrhœa which has been under my care, has been so treated. To sum up briefly the results of my experience, I do not remember a single case, in which the disease was thus treated in its early stage, which did not exhibit a rapid and decided change for the better. In most instances an improvement was observed in the stools, in the course of a few hours, the motions becoming more feculent, with a marked decrease of blood and mucus, and as decided a diminution of tenesmus. Where, however, the disease has assumed a chronic form, or the patient is subject to continual returns of the purging, the medicine sometimes fails to relieve. I am in the habit of prescribing one scruple of the powder every three or four hours, the first dose preceded by tinct. opii. ♏ xx., and I have not observed much difference in the effect, whether vomiting was produced or not, indeed the first dose or two is generally rejected, a small portion of each, however, probably remaining in the stomach in every instance.

"Combined with the above I occasionally give an enema of pulv. ipecacuanha 3 ss. in thin conjee ℥ij.

"For the disease as it appears in children and infants I generally use enemata only, a mode of treatment from which I have observed the greatest benefit, with the advantage of not upsetting the stomach.

"Successful as the treatment by large doses of ipecacuanha has been, with Europeans, I have seldom seen much benefit in applying it to natives, and this is exactly what might be expected when we consider the very different condition under which the disease exists in the latter, who are usually attacked by dysentery when suffering from anemia, consequent upon fever, starvation, or other debilitating causes."

J. W. MUDGE, Esq., M.D., *Vepery Dispensary.*

"The treatment of dysentery by large doses of ipecacuanha has been pursued with much success in the Vepery Hospital and Dispensary.

"The number of patients treated is as follows:—

"In patients 16, out patients 47. The large doses have been used till the symptoms yielded (from two to three doses being required) after the acute symptoms had been removed, small doses of Dover's powder, and other simple remedies, were sufficient to complete the cure. I consider this mode of treatment of great value in acute dysentery; like every other remedy it requires to be administered with judgment and caution, and is not applicable to all cases. I have not as yet had sufficient experience to be able to enter into more details regarding this method of prescribing ipecacuanha. It seems to have some analogy in its action in dysentery to that of quinine in fever. The large dose acts most speedily, and but few repetitions are required."

C. I. SMITH, Esq., *Garrison Surgeon, in charge Detachments 2nd European L. I., Waltair.*

"I have the honor to forward copies of two cases in which I used large doses of ipecacuanha with great success.

"In both cases it seemed to me that the disease was cut short by the remedy. I have given it in three other cases with success, but as they were mild, and would probably have recovered under any treatment, I have not thought it worth while to trouble the Director General with them."

Art. III.—*Notes on the Anthelmintic effects of Santonine.* By W. N. Chipperfield, Esq., Acting Garrison Assistant Surgeon, Fort St. George.

The inhabitants of Southern India have a very great proclivity to suffer from intestinal worms. This is especially the case with natives, but applies also, in a less degree, to both Europeans and Eurasians. With reference to the relative prevalence of the different families of intestinal worms, in India, it may be said that by far the greater number of sufferers are affected with the *nematoïd* worms, and that the *ascaris lumbricoïdes* is much more common than the *ascaris vermicularis*, or the *tricocephalus dispar*, though all three species are met with. But still an example of the *cestoïd* family is by no means uncommon; for in some parts of India, the *tænia solium* is a common parasite, and, so far as my limited experience enables me to speak, it especially affects the European and East Indian community. I have not observed many cases of tænia at Madras, but when stationed at Bangalore, the parasite was there so common that I had ample opportunities of testing the value of Kousso in the treatment of tape worm, and found that, in almost every instance, in which a proper dose of the drug was administered, the tænia was discharged entire and dead.

The *ascaris lumbricoïdes* is extremely common in Madras, and especially so in natives who reside on the borders of tanks and in marshy places. It is not my intention to enter upon the subject of the *causes* of intestinal worms, but it would be interesting to determine how far the extensive prevalence of these parasites, amongst the poorer population of India, may be attributed to climatic, and how far to alimentary, influences. We know that climate and locality have much influence in the production of these parasitic worms. The inhabitants of Switzerland and Holland, and the residents in the fenny parts of England, have a peculiar tendency to be infested with these animals. That climate must have some effect in the countries alluded to is apparent from the fact that the peasant inhabitants of the Tyrol, who, like the Swiss, are very simple feeders, living almost exclusively on milk and maize, are rarely affected with the parasites; that the Danes, whose food is very similar to that of the Dutch, are not much troubled with them; and that the cases occurring in other parts of England bear

but a trifling proportion to those observed in the fen districts. Probably both climate and food have an influence upon the prevalence of these animals in India, for in a relaxing climate, when the mode of life is more or less inactive and sedentary, farinaceous diets, by lowering the tone of the digestive organs, and keeping them overloaded with a mass of ill-digested food, afford a very favorable condition for the development of intestinal worms, and especially of that infestant of the small intestines the *ascaris lumbricoïdes*.

Ascarides are also very prevalent in Burmah, more especially in the Tenasserim Provinces; and here the affection is by no means confined to the Native inhabitants, for European children are very liable to be troubled with the parasites.

I have seen thirty-seven large sized *ascarides lumbricoïdes* discharged, in the course of a few hours, per anum, by a European infant of eleven months of age, then residing in Moulmein,—the expulsion having been effected by a dose of a greyish black powder called the "Java worm powder," the composition of which I am unacquainted with. Since I have employed santonine as an anthelmintic, I have been shown one hundred and thirty-five *ascarides lumbricoïdes*, of various sizes, which were passed in the course of twelve hours by a diminutive child of four years of age. I have heard it stated that it is very rare to find only one of these parasites in any individual, and that there are invariably two or more. I do not know how far this assertion is correct; it is probably most usual to meet with many worms in one individual, but I have, on several occasions, known all symptoms to disappear on the discharge of two of the animals; and, in one instance, no symptoms were present for more than a year after the expulsion of one large *ascaris lumbricoïdes* from a child of two years of age. Anthelmintics of various kinds were exhibited to this child, under the supposition that more of these animals must be in the intestinal canal, though not manifesting their presence by any of the ordinary symptoms, but no second worm was discharged until more than twelve months afterwards, when in the midst of some infantine gambols the child stopped, coughed, said he was choking, and ultimately ejected a large *ascaris* from the mouth, together with a quantity of milk he had taken about half an hour previously.

The symptoms by which the *ascarides lumbricoïdes* mani-

fest their presence appear to me to be less pronounced, or at all events less noticed, amongst natives of India than in other countries. In fact their presence is very often first made known by the actual discharge per anum, or by vomiting, of one or more of the animals. When the parasites pass from their natural habitat, the small intestines (I am alluding to the *ascaris lumbricoïdes** in particular,) into the stomach the symptoms may be very prominent, such as constant nausea, irritation at the upper part of the pharynx, and a sense of tormina with pain and weight in the præcordia. That severe symptoms do sometimes occur in India from the presence of ascarides in the alimentary canal is an undoubted fact; I have recently been informed of two instances in which trismus was one of these symptoms, and I had the opportunity of seeing one of the patients, an European girl of 16 years of age, just after she had been relieved of her trismus by the expulsion of several *ascarides lumbricoïdes* under the influence of a dose of santonine.

That the parasites may be present in the intestinal canal without manifesting their presence by any particular symptom, is equally certain. It has happened probably to almost every medical officer in India to observe cholera attacking individuals apparently in perfect previous health, and who have never exhibited any symptoms of ascarides; and who have nevertheless expelled several worms as soon as free serous discharges have been set up from the intestinal mucous membrane. Occasionally in cases of sudden accidental death of persons in apparent perfect health, a *post mortem* inspection has revealed numbers of parasites adhering to the intestinal walls. Not long since I saw several *ascarides lumbricoïdes* crawling over the surface of the mesentery of a young man, whose death was produced by rupture of the intestines from a gun-shot wound, and, from enquiries I made, I learnt that he had never presented any symptom leading to the supposition of his being troubled with worms.

Numerous anthelmintics have been used for the purpose of effecting the expulsion of the *ascaris lumbricoïdes*. Purgatives, especially aloës, scammony, and jalap; preparations of iron and bitter infusions have probably obtained the greatest credit. Some people prefer ferruginous preparations

* The term *lumbricus* commonly used to designate the *lumbricoïd ascaris*, should be confined to the earth-worm; in order to avoid confusing the latter animal, which has red-blood and a nervous system distinct, and consisting of a median ganglionic chain, with the ascaris, which has colourless blood and a rudimentary nervous system.

(the sesquioxide of iron was formerly held in great repute) whilst others have a preference for simple bitters. A medical friend lately told me that he desired no better anthelmintic, so far as ascarides were concerned, than the disulphate of quinine; and he added that he had frequently known this remedy when given in cases where the presence of worms was unsuspected to have the effect of expelling several of these animals. Some people invariably employ calomel as a constituent of the aperients they use as vermifuges, but it does not appear to have any specific effect upon the worms, as Scopoli observes, that the parasites are in no persons more abundant than in those living near the great quicksilver mines of Idria, though their constitutions are often thoroughly saturated with mercurial exhalations.

The remedy, the efficacy of which in the treatment of *ascarides lumbricoïdes*, this notice is specially intended to demonstrate, has but recently been obtained in its isolated form as a vegetable alkaloid. It is a white, crystalline, odourless, bitter substance scarcely soluble in cold water. It is known under the name of *Cinin* or *Santonine*,—the latter being the more common term—and it is obtained in the form of minute white glistening scales which change to a yellowish gray colour under the action of the sun. It is procured from some species of *Artemesia*, those which are sold under the name of *worm-seed*. There are several sources of the supply of this substance, viz., the Levant, Barbary, and the East Indies. The article met with in the shops in England consists of small globular flower-buds, calyces, and broken peduncles of various species of *Artemesia;* Botanical authorities state that the species composing worm-seed are *A. Vahliana, A. Pauciflora, A. Lechiana, A. Glomerata* and *A. Maritima*. This substance is known by various names, as *Semina contra-vermes, Semina santonici, Semina sementina*, and *Semina cinæ*. It was employed many years since by Rosenstein, who gave ten grains, combined with four of sulphate of iron, and twenty of jalap, every morning for three successive days at the beginning and end of the wane of the moon![*] It was also recommended by Bremser[†] who used it with tamarind stones, valerian, jalap, sulphate of potash and oxymel of squills, in the form of an electuary. The ordinary dose of the substance, sold in England as worm-seed, is about two drachms,

[*] Cyclopædia of Practical Medicine—Art. Worms. [†] Op. cit.

but I believe it has never been considered of any very great value. It is recommended to be given in coarse powder, and it has been supposed that it effected the expulsion of the worms partly mechanically, but we now know from the evidence we have of the very active nature of the isolated principle, santonine, that the effects of worm-seed must be due to this principle alone.

Santonine is said to exhibit its anthelmintic powers more effectually when administered in castor oil,* but I have not found this to be the case. I have frequently employed the santonine simply rubbed up with about thrice its weight of sugar, and the expulsion of numerous worms, without the exhibition of any aperient whatever, has afforded evidence of the efficacy of the drug. Occasionally I have given it in castor oil; and, generally, if no effect follows within three or four hours after taking the second dose, I give a dose of castor oil or rhubarb. The dose of santonine is from six to ten grains for an adult, and from two to four grains for a child. It should be remembered that santonine is an active poison, and therefore requires cautious administration especially to young children. I think it advisable to allow an interval of six or eight hours to take place between any two doses of the medicine, and not to administer more than three doses in succession, allowing a space of three or four days to intervene before employing the remedy again.

One peculiar effect of santonine is to produce an intense yellow coloration of the urine; and I believe this effect is more commonly observed when no vermifuge action follows the exhibition of the drug; in other words, when it is administered to those who have no worms to be expelled. Another effect is upon the visual perceptions, all objects presented to the view appearing to be of a greenish yellow color. These effects of santonine, the coloration, viz., of both vision and urine, were observed in 1858 by M. Martini, and have since been noticed by M. Guépin of Nantes and Professor Falck of Marburg, abstracts of whose papers appeared in the *Medical Times and Gazette* for April 28th and September 1st of the present year. These gentlemen were experimenting upon the drug as a remedy in internal ophthalmias at the time they noticed these effects. Six of my patients have observed similar results, but only two from whom

* Kuchenmeister: and Dr. J. Brisbane in *Medical Times and Gazette*.—June 9th, 1860.

worms were expelled, mentioned to me the occurrence of yellow coloration of objects or of the urine.

I conclude this notice by briefly mentioning some cases in which I have recorded the results of the administration of this anthelmintic.

1. A native male, aged 35 years, took six grains of santonine in three drachms of castor oil at bed time. The next day had three loose stools but passed no parasite. The following day at 5 A. M. passed 17 ascarides lumbricoïdes; at 1 P. M., 10; and in the evening 8 more. Total 35.

2. Eurasian male, aged 10 years. Three grains of santonine in two drachms of castor oil, early in the morning. Passed 4 large ascarides. Third day dose repeated, 2 very large worms.

3. Native female aged four years. Two grains santonine in eight grains sugar at bed time; same dose repeated at 5 A. M. and at noon. Several stools, 135 ascarides of various sizes.

4. Native male, aged 5 years. Same doses as No. 3. Several stools, 27 ascarides lumbricoïdes.

5. European male, aged three and half years. Same doses as No. 3. Two stools, no ascaris. This child said every thing appeared so pretty and green, and his urine was of a very deep yellow colour. These effects passed off in the evening.

6. Eurasian female, aged six years. Four grains santonine in ten grains sugar at bed time. Several stools, several ascarides lumbricoïdes, the number not ascertained.

7. Native female, aged two and half years. Two grains santonine in ten grains sugar at bed time and at 6 A. M. No stool by 10 A. M., when two drachms castor oil were given. Several ascarides lumbricoïdes were expelled during that and the following day.

8. European male, aged three and quarter years. Same doses as No. 7. Passed several ascarides vermiculares. This child's urine was coloured intensely yellow.

9. Eurasian male, aged three years. Three grains santonine in two drachms castor oil, early in the morning. Four large ascarides lumbricoïdes.

10, 11, and 12. Three other children of the same family, aged 4, 7, and 11 years respectively. Similarly treated and with a similar result.

13. Mahommedan female, aged 21 years. Five grains santonine in sugar at bed time and early in the morning. Several stools, several ascarides lumbricoïdes.

14. Her son, aged four years. Three grains santonine in sugar at bed time and in the morning. Several stools, 20 ascarides lumbricoïdes.

15. Another male child of No. 13, aged nine months. Two grains santonine in sugar three times in the day. 37 ascarides lumbricoïdes; three days subsequently similar doses repeated. Three stools, 14 very small ascarides lumbricoïdes.

16. European male, aged eight years. Four grains santonine in three drachms castor oil, 4 large ascarides lumbricoïdes. Three days afterwards a similar dose, 2 very large worms. After an interval of four days a third dose procured the expulsion of 5 more worms. This child's urine was coloured of an intense yellowish green hue.

17. A sister of No. 16, aged six and half years. Three grains santonine in sugar at bed time and in the morning. Several worms passed, their number and size not ascertained.

Dr. Montgomery mentioned to me the two following cases, as well as that of the European girl before alluded to, as presenting trismus as a symptom of ascarides.

A native male, aged 21 years. Ten grains santonine at bed time, and half an ounce castor oil the following morning. During the day he passed a *slimy bag* containing 50 worms of various sizes. The dresser was sent for to this patient, who was suffering great pain from the distension of the anus by the *slimy bag*. This was drawn out with a pair of dressing forceps and was ruptured by the process. The dresser cannot give any further description of the bag, or state whether it appeared originally to have been entire and membranous in its character.

A European boy, aged four years.

Santonine g. iij.
Pulv. Rhei. g. iij.
„ Zingiberis g. ij.

To be given in water early in the morning, and two drachms of castor oil three hours afterwards. In the course of 24 hours 57 ascarides lumbricoïdes were passed.

Since the above was written, Mr. Cornish has drawn my attention to the nature of the substance called "Java Worm-powder," the efficacy of which as an anthelmintic I had evidence of in Moulmein. It appears that in 1856 the attention of the, then existing, Medical Board was directed to the vermifuge properties of the "Java worm-powder," and that their Secretary addressed Asst. Surgeon

R. R. Sutleffe, then stationed at Singapore, requesting him to procure a supply of the powder, in order that its effects might be tested at the Presidency, and to report, as far as possible, upon its composition. This correspondence has been placed at my service by the courtesy of the Principal Inspector General of the Medical Department, and I find that Mr. Sutleffe, in a letter dated 10th October 1856, stated that the powder was obtained from the flowering tops of *Artemesia Absinthium* and *A. Santonica.* He quotes Royle as to the dependence of the properties of this substance "upon a volatile oil and a peculiar principle called santonine." The doses of the powder are stated to be—

For an adult, 20 grains.
From 14 to 18 years of age, 15 grains.
„ 10 to 14 „ „ 10 „
Under 5 „ „ 4 to 6 „

In this letter Mr. Sutleffe, upon the authority of Dr. Little (a private practitioner at Singapore), alludes to the efficacy of "the preparation called santonine," and gives the doses as three grains for a child, and from five to seven grains for an adult.

In a subsequent communication Mr. Sutleffe corrects his former statement as to the composition of the Java powder and gives the following receipt for its preparation.

Ry. Santonicæ seminum Cont. ℥ ij.
Valerianæ radicis Cont. ℥ i.
Pulv. Scammonii Comp. ℈ i.
Zingiberis radicis Contrit. ℈ ss.

And he offers the opinion that the efficacy of the santonica may be enhanced by the addition of the compound scammony powder. It will be seen that five grains of this powder can contain only about half a grain of the compound scammony powder, and as this consists of one part of ginger and four parts each of jalap and scammony, its effects, in such small doses, must be very slight. It will be further noticed that the above preparation is very analogous in its composition to the worm-electuary of Bremser, previously referred to. Assistant Surgeon Clarence Cooper, M.D., in December 1836, also drew attention to the vermifuge properties of the Java powder; and more recently Surgeon Major J. L. Ranking, M.D., has reported favourably of its effects. I have not obtained the reports of the Presidency medical officers upon the results of their trials of this powder, but I presume it will scarcely be deemed necessary to

resort to the use of this preparation when we have, in santonine, a remedy, the efficacy of which has been placed beyond all doubt and which is evidently the active principle of the Java worm-powder itself. In a letter dated 25th May 1857, Mr. Sutleffe states that he finds santonine "a much more eligible form of giving the medicine, particularly to children," and that, in the cases in which he has given it, "he has found it quite as beneficial as the compound santonine powder."

I may mention, in conclusion, that the cost of the Java powder (in Burmah) is from six to eight rupees per ounce, whilst santonine is procurable in Madras at five rupees per ounce; and as the latter is used in doses of less than half the weight of the former, it is, of course, considerably the cheaper of the two preparations.

ART. IV.—*Remarks on a case of Traumatic Tetanus, treated with Fleming's Tincture of Aconite.* By GEORGE SMITH, M.D., Residency Surgeon, Hyderabad.—*(Read at a Meeting of the Medical and Physical Society, Secunderabad.)*

FIRST DAY.—11*th August* 1859.—Gholam Hussain, Æt. 10½, of spare habit, slightly injured the tip and nail of the middle finger of the right hand, in the hinge of a door ten days ago, and for the last two days has had symptoms of threatening trismus.

He complains of stiffness of the masseters, difficulty in opening the mouth, rigidity and pain between the shoulders, and stiffness as well as pain of the muscles of the neck. Skin slightly warm; bowels open; pulse 105; tongue clean. The nail of the injured finger is loose, and the tip of the finger is slightly discolored.

A castor oil and turpentine enema to be administered. The following liniment to be rubbed into the affected parts.

℞. Linim. Opii. ʒ j.
Ext. Bellad. ʒ ss.
Tinct. Aconit. ♏ xx.
Ol. Olivæ. ʒ ij. Misce.

Ft. linimentum. The fourth part to be used at a time. A poultice to the finger.

Habt. Tinct. aconiti (Fleming's) gtts. ij. every hour in a little water. First dose to be given at 11 A.M.

½ past 1 P. M.—Three doses have been given; pulse 120, small and weak; skin perspiring freely; complains of thirst and slight nausea; can open his mouth somewhat more freely; no other change.

½ past 2 P. M.—Vomited a little fluid, next dose (3 P. M.) to be withheld. To have some warm tea.

½ past 4 P. M.—Has vomited several times, took a little broth.* Repeat the aconite draught.

5 P. M.—Pulse weak, 105; skin warm; perspiration copious; feels a tingling sensation *in the injured finger alone;* opens his mouth with some freedom, but is unable to chew a little bread which was given him. To have two drops of Fleming's tincture every second hour. Repeat enema at 7 P. M.; continue liniment and poultice.

½ past 8 P. M.—Pulse 105; skin warm; perspiration less; feels cold; is giddy on sitting up; bowels were freely opened by the enema; has taken a little broth; complains of no uneasiness in the cheek or back. To have three drops of the tincture immediately.

½ past 10 P. M.—Feels better; pulse 85; repeat the draught; continue the liniment. Has taken in all twenty drops of Fleming's tincture to-day.

2nd day.—12*th August,* ¼ past 1 A. M.—Has been asleep since 10½ P. M.; bowels inclined to be moved; skin moist; pulse 78, weak; voice weak; feels no pain; has tingling in right hand and forearm.

7 A. M.—Has passed upon the whole a good night; bowels opened once; pulse 114, small and weak; slight trismus and tetanic action of the sterno-cleido mastoids; mouth is opened with some difficulty; is thirsty; tingling of the right hand and lips. Give three drops of the tincture of aconite now, continue the same dose every 2nd hour, a little tea to be given now, and broth at 8 A. M.

12 Noon.—Has taken three, three-drop, doses; has slept a little; pulse 84, weak and compressible; stiffness on opening the mouth; affected muscles feel less rigid. Continue the broth.

5 P. M.—Tetanic action of the masseters and sterno-cleido mastoids, otherwise feels well. To have a purgative enema at bed time.

¼ past 9 P. M.—Complains of difficulty in swallowing; bowels

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* Broth was freely given during the treatment to ward off the sudden sinking which both tetanus and aconite have a tendency to induce.

open; pulse weak, 80; has slept a little; should he awake after midnight, let him have four drops of the tincture of aconite. Has taken in all 13 drops of Fleming's tincture to-day.

3rd day—13*th August*, ½ past 7 A. M.—Has slept pretty well; had one dose (4 drops) at 10 P. M., and another at 4 this morning; has taken a little tea; slight soreness of the throat; opens his mouth pretty freely; pulse 84, regular, weak; complains of stiffness of the muscles of the nape of the neck, as well as of a bruised feeling in the muscles of the loins, extending round the abdomen; bowels costive.

Habt. Calomel. grs. ij.

To be followed by

Ry. Ol. Ricini ʒ vj.
Ol. Terebinth. ʒ ii. ss. Misce.
Ft. Haust.

2 P. M.—Bowels have acted twice; evacuations natural. To have three drops of Fleming's tincture now, and a similar dose every 2nd hour.

6 P. M.—Pulse 120, weak. To take four drops now, and four more at 8 P. M.

10 P. M.—Has been asleep for the last half hour; pulse 66. Has taken 22 drops of Flemming's tincture to-day.

4th day—14*th August*, 2 A. M.—The boy on awaking appears better; can open his mouth freely; has aching pain only in the loins; tingling of the fingers, toes and lips; soreness in the throat; pulse 62.

8 P. M.—Pulse 105, varies with attitude, sinking to 96 on sitting up; has stiffness of the masseters; his expression exhibits the true "facies tetanica;" complains of soreness and stiffness of the muscles of the neck, and of the long muscles of the back. Bowels open. To have four drops of the tincture now. Continue the liniment, adding to it Tinct. opii. ʒ i. and Ext. Belladonnæ grs. x. To have broth freely if he can swallow it.

½ past 4 P. M.—Pulse 72, small, weak and intermitting; skin cool and moist; feels tingling and itching over the whole body; has taken broth several times.

9 P. M.—Is disposed to sleep; complains of numbness of the tongue, and inability to move it about; pulse weak, 72, and disposed on motion to become irregular. Four drops have been given to-day.

5th day.—15*th August*, 8½ A. M.—Pulse (sitting) 105, weak, not intermitting; mouth opens but not freely; has pain and stiffness of the muscles of the back; a slight

papular eruption* on forehead and chest; pains of joints and tingling of the general surface. To take three drops now.

4 P. M.—Patient very well and cheerful; pulse 72, and intermitting; tingling of fingers, and difficulty in moving the tongue complained of. To have broth; the liniment to be well rubbed into the affected parts.

10 P. M.—Boy has fallen asleep; skin perspiring; pulse 64, weak, and intermits every 5th or 6th beat. Intermit the medicine. Three drops have been administered to-day.

6th day—*16th August*, 8½ A. M.—Has passed a very restless night; pain and hardness of the extensors of the back; disease has evidently gained ground; pulse 99, small, regular; complains of weight of head and great stiffness of the neck; peculiar heat in the affected muscles; uneasiness over the origins of the diaphragm and in the muscles of the eyes. Three drops to be given now.

½ past 2 P. M.—Took a 2nd dose of three drops at 11½ A. M.; pulse 87, weak; skin cold; has slight spasms of the back; sudden jerking of the arms; tetanic dragging of the muscles of the face, and uneasiness over the diaphragm; cries out with agony. To have two drops now, and three at 4 P. M.

¼ to 6 P. M.—Spasms on the increase; pulse weak and intermittent; surface cold and clammy; complains of pain in the epigastrium, diaphragm, and extensors of the back. Three drops to be given now. Liniment to be rubbed in freely should he fall asleep; a dose of five drops to be given on awaking.

10 P. M.—Unfortunately my Assistant awoke him gently to administer the above ordered draught, the result *was a severe attack of opisthotonos and trismus, with jerking of the arms*; swallowed the draught with great difficulty; pulse quick; 19 drops have been given to-day.

7th day,—*17th August*, 12½ A. M.—Breathing has been *seriously* affected several times in consequence of spasms and fixation of the diaphragm; cries out piteously when the tetanic spasms, which are elicited by movements of any kind, whether voluntary or involuntary, supervene; skin moist; pulse 64; jaw less rigid. To have five drops now, and similar doses at two and four A. M.

8½ A. M.—Is better; neck and back feel rigid and hard;

* This eruption is often noticed in tetanus; it resembles if it be not identical with sudamina.

pulse (lying) 69, weak, but regular; has pain in the epigastrium; occasional difficulty of breathing; causing great anxiety and alarm, no affection of the glottis, recurrent opisthotonic spasms. Five drops now and ℞ v. every second hour.

5 P. M.—Has had five doses of ℞ v. each; is now looking and feeling better; pulse weak, 66; has some appetite; bowels costive. Continue ℞ v. every second hour. To have a purgative enema. Broth to be given freely.

8½ P. M.—Was found a few minutes ago lying prone and fast asleep by my Assistant, who unfortunately awoke him. The result was an immediate and most severe fit of opisthotonic spasm, in which the muscles of the back, arms and legs, were affected. The whole body became rigid, the fingers clutched, the toes bent. The spasm lasted several seconds, and was very severe. Swallowed his draught with difficulty; mouth is now tightly closed; bowels have not been freely moved. Repeat enema. Strict injunctions issued that he be on no account roused from sleep in future.

10 P. M.—Bowels have acted freely; pulse 99, regular, not weak; much rigidity of the back; speaks less distinctly than he did; has pain and spasm in the diaphragm. To have ℞ vi. of Fleming's tincture now, and every second hour during the night, provided he be awake. ℞ xxxvi. and drops 20 have been administered to-day.

8th day—*18th August*, ½ past 1 A. M.—Being awake a dose of ℞ vi. has been given; pulse 86.

4 A. M.—Another dose has just been given.

6 A. M.—Slept a little last night; has pain and tension in the back and epigastrium; slight spasms on swallowing food or medicine; pulse 94, weak.

7½ A. M.—The violent spasms have subsided, but the constant recurrence of slight ones, along with stiffness of the back, jerking of the arms, and trismus, shew the continuance of the tetanic action. Has slight pain in the epigastrium and a catch in breathing; pulse 99, weak, not regular. To have drops 12 every second hour.

Noon.—No spasms; pulse 96.

5½ P. M.—Has just suffered from severe opisthotonic spasms with fixation of the inspiratory muscles, which caused him to scream with agony; pulse 99. To be kept strictly quiet. ℞ x. to be given at 6 and 8 P. M.

9 P. M.—Pulse 90; very weak; looks very anxious and exhausted. The spasms continue with very little intermission;

complains much of the pain of the back and fixation of the chest. Is unable to sleep; starts up with severe spasms; much jerking of the arms, and rigidity of the masseters; skin moist.

R. Tinct. Aconiti (Fleming's) ♏ x.
Liq. Opii Sedat. ♏ xx.
Sp. Am. Aromat. ʒ ss.
Mist. Camph. ʒ vi.
Misce.

To be taken at 10 P. M. ♏ xlii. and drops 80 have been administered to-day.

9th day.—*19th August*, ¼ past one A. M.—♏ x. have just been given.

7 A. M.—Has had a good deal of spasm during the night; has slept a little with occasional startings since 1 A. M.; is thirsty; skin warm; perspires freely; pulse 99, weak; ♏ x. to be given now.

8½ A. M.—Symptoms continue.

Habt. Tinct. Aconiti ♏ x.
Liq. Opii Sedat. ♏ viij.
Misce.

Ft. Haust. to be repeated every two hours, till he falls asleep.

11 A. M.—The second dose of aconite was administered without the opium.*

1 P. M.—Is drowsy and tranquil; pulse 94. Continue the tincture of aconite alone, in ♏ x. doses.

3½ P. M.—Is sitting up and feeling easy; spasms much less; pulse 69, very small; can open his mouth freely; has taken some broth; complains of giddiness. Give ♏ v. of tincture at 5 P. M.

5½ P. M.—Draught has just been given; has taken ʒ i. of Fleming's tincture since 7 A. M. to-day.

9 P. M.—Is now asleep; pulse 70, weak, regular; breathes freely and regularly; mouth open; no violent spasms observed, but slight tetanic action still continues. To have ♏ v. at or about midnight; larger doses only if the spasms increase in severity. To have broth from time to time during the night.

½ past 11 P. M.—Has a return of severe spasms now;

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* My patient was seen to-day by Superintending Surgeon Cole and by Deputy Inspector General Muir.

has taken no aconite for six hours. ♏ x. of the tincture immediately. ♏ xxxv. have been administered to-day.

10th day—*20th August*, 2 A. M.

Habit. Tinct. Aconiti ♏ x.
Liq. Opii Sedat. ♏ viij.
Misce.
Ft. Haust. Stat. Sum.

6. A. M.—Has had a good deal of spasm, which proved more continued and harassing than severe.

Repeat the draught of aconite and sedative liq. of opium.

8 A. M.—Suffers from a constant succession of slight spasms, which come and go rapidly, affecting chiefly the muscles of the back and chest, but not implicating the arms or legs, and unattended with trismus; head warm; complains of giddiness; pulse 99, regular. Looks anxious probably from continued excitement and want of sleep. Bowels costive. To have croton oil ♏ iij. now and ♏ x. of tinct. of aconite at 10 A. M.

Noon.—Spasms less; desires to pass urine, but cannot; bowels not yet acted upon; pulse 99, weak. A cathartic enema containing turpentine, to be administered and repeated, if necessary, in half an hour.

1 P. M.—Feels easier; tinct. of aconite ♏ x. now.

9 P. M.—Is now asleep; pulse weak, about 66; is lying on his side and reposing tranquilly. To have on awaking,

Ry. Tinct. Aconiti. ♏ x.
Liq. Opii Sed. ♏ xxv.
Misce.

3 i. of Fleming's tincture has been administered to-day.

11th day—*21st August*, 7½ A. M.—Took his dose at ten minutes to 11 P. M. last night; a second, without opium, at 2 A. M. to-day. Has passed a fair night, having slept upon the whole well. Has some sickness at stomach and slight drowsiness, attributable to the opium; spasms slight; pulse weak, 90; tongue feels large, and is moved about with some difficulty; pupils much contracted; bowels costive; urine has been voided without spasm. To have ♏ viij. now, and ♏ v. every third hour; the dose to be raised to ♏ x. should severe spasms recur; broth to be given freely.

9 A. M.—To have an enema, which is to be repeated if required.

1 P. M.—Bowels open. Continue the tincture as ordered.

5½ P. M.—Is doing well; tongue stiff; pulse 76; skin warm; complains of giddiness; is thirsty; has pain in the

knees; has had slight spasms during the day. Continue ♏ v. every third hour. ♏ liii. have been given to-day

12*th day*—22*nd August*, 8 A. M.—Took doses at 9 P. M. and at midnight; also at 4½ and 7½ A. M.; to-day, pulse 72, quite regular; feels better; has some appetite; is now sitting up. Bowels have been opened once moderately; has passed urine freely; has cramps in the calves and occasional very slight jerkings of the arms. Continue ♏ v. every third hour. To have broth freely.

4 P. M.—Continues well. Continue medicine. On this the 12th day ♏ xxv. have been given.

13*th day*—23*rd August*, 8 A. M.—Has had doses at 2½ and 5½ A. M.; had slight return of spasm after midnight. To have ♏ v. every second hour.

½ past 7 P. M.—Continued well up to 3. P. M.; since then the spasms have been more frequent and severe; complains of pain in the region of the heart; pulse 66, small and at times irregular; looks more than usually exhausted; is inclined to sleep; bowels not open to-day; skin dry. To have an oil and turpentine enema. To have a dish of good broth at 8 P. M.; and the following draught at 9 P. M.

Ry. Liq. Opii Sedat. ♏ xx.
Sp. Am. Arom. ♏ xxv.
Aquæ ℥ ss.
Misce. Ft. Haust.

A draught half strength to be given if required, at 1 A. M. Intermit the doses of aconite. ♏ xl. have been given to-day.

14*th day*—24*th August*, 10 A. M.—Has passed a good night; bowels have been freely opened; spasms very slight; pulse 84, regular; skin moist and warm; pain of chest gone; appears to be quite easy; appetite good. To have three drops of the tinct. of aconite and three of the sedative liquor every 3rd hour. An enema and opiate draught at bed time. On this, the 14th day, 12 drops have been given.

15*th day*—25*th August*, 9 A. M.—Has slept well; slight spasms during the night; feels sick and has vomited twice; pulse 99, small, regular. Three drops of the tincture every third hour. To-day drops 9 have been administered.

16*th day*—26*th August*, 8 A. M.—No aconite has been given since 3 P. M. yesterday; spasms very slight; pulse 72, small, regular; no sickness; can protrude the tongue; slight stiffness of the jaw; perspires freely; bowels open; passes urine freely; diet to be improved. Tinct. of aconite

drops 2 three times to-day. Continue the aconite and belladonna liniment. On this, the 16th day, 6 drops have been taken.

17*th day.*—27*th August*, 8 A. M.—Since 3 P. M. yesterday has had several smart and rapid but irregular spasms, affecting chiefly the masseters and rhomboids. Bowels not open. To have an enema. Tinct. of aconite ℥ v. now, and drops three every 3rd hour during the day.

4. P. M.—Feels uncomfortable; bowels not open. To have an enema; repeat if necessary. ℥ v. and drops 12 were administered to-day.

18*th day.*—28*th August*, 8½ A. M.—Continued very restless till midnight, having suffered from several rather smart spasms, affecting chiefly the muscles of the back high up. The following draught was administered at midnight.

Ry. Liq. Opii Sedativ. ℥ xv.
Sp. Am. Arom. ℥ xxv.
Misce.

Has slept well since midnight; pulse 84, firm; some tension of the dorsal muscles between the scapulæ.

Ry. Pulv. Jalap. Co. grs. xxxv.
Calomel grs. v.
Misce.

Ft. pulv. to be given now; warm fluids to drink; an enema to be given at 10 A. M; after the bowels are freely moved, let him take

Ry. Tinct. Aconiti gtts. ij.
Sp. Am. Arom. ℥ xv.
Sol. Mur. Morph. ℥ v.
Aquæ ʒ ij.
Misce.

Ft. Haust. to be given every third hour. Continue the liniment.

19*th day*—29*th August.*—No aconite was administered yesterday; bowels were not relieved by the medicine; feels weak and sick; in the afternoon a dose of Epsom salts was given, and the action of the bowels solicited by repeated enemata; after which they acted freely; slept well; pulse 80, weak; no spasms; appetite bad. To be kept quiet.

20*th day*—30*th August.*—Is much better; all traces of tetanic action are rapidly disappearing. No medicine. To have broth and "pullao," to which he has taken a fancy.

25*th day*—4*th September.*—Goes home to-day quite well.

3rd October.—Continues quite well.

Remarks.

During the months of July and August 1859,* an unusual proclivity to tetanus manifested itself. Idiopathic cases, chiefly from exposure to draught of cold air at night, were of frequent occurrence, as were also cases of puerperal tetanus, and of trismus after slight injuries.

Tetanus in short was *epidemic,* and very fatal during the months above noted.

Tetanoid affections are so common here, that the native hukeems regard idiopathic tetanus as curable. They treat cases of this disease with anti-spasmodics, such as castor, myrrh, &c., and use the actual cautery freely, applying it to the vertex and nape of the neck. On the other hand they regard traumatic tetanus as incurable, in this respect echoing the opinion of Hippocrates, who held that "Tetanus supervening upon a wound is mortal." The reason why the native hukeems regard idiopathic tetanus as more curable than we know it to be, appears to me to be this, that they are practically unable to distinguish between tetanic and tetanoid symptoms, between the true tetanic spasm and those proteiform spasmodic diseases, which arise from hysteria and from vermination, and which are so common in the city of Hyderabad.

That females are subject to convulsive epileptiform and tetanoid attacks, less dangerous in reality than in appearance, is a fact well known to the native hukeems; but instead of tracing these diseases to peculiar derangements of a hysteric character or to the irritation of worms, they class them all as cases of tetanus, or of demoniacal possession.

We are as yet unacquainted with the precise atmospheric changes which create a susceptibility to tetanus. We know that it is more frequently observed in hot than in cold countries, and in hot countries at certain seasons of the year than at others. In this neighbourhood the annual susceptibility begins to manifest itself in June, immediately after the first heavy fall of rain; during July and early part of August the proclivity increases, to subside almost entirely before the end of the month. The more common diseases here during these three months are cholera, furunculus, diarrhœa, dysentery, influenza, catarrhal ophthalmia, bilious and remittent fevers, and coryza; diseases dependent upon

* A similar tendency was remarked, though to a less extent in the present year (1860.)

atmospheric changes and hyper-carbonization, or other vital alterations, of the circulating fluid. Dr. Todd holds the view here indicated; he remarks. "It would seem that some peculiar state of the system, probably some peculiar state of the blood, is a necessary precursor of the malady."

Tetanus is much more common among Natives than among Europeans and East-Indians, probably because although the predisposition created by seasonal and atmospheric changes is developed in all alike, the exciting causes of the disease are much more universal and potent in the case of Natives than of Europeans. The poorer classes of Natives for example, weakened in body by seasonal changes and by inadequate supplies of food, are, during the rains, often exposed to the effects of sudden cold, especially during the night, whilst the system of treatment adopted by them and by the Native "Hujjams" in cases of wounds, injuries and fractures, and by the native midwives in cases of parturition, provides the conditions most likely to excite this formidable disease.*

Tetanus was very prevalent at the time when this boy's case came under treatment, and the trifling character of the local injury from which he suffered shewed how strong the proclivity to trismus must have been. The first symptoms of trismus appeared on the eighth day after the injury, and two more days were lost by the boy's father, in carrying the lad about from one native hukeem to another.

When the case was placed under my care, I made up my mind at once to follow Mr. de Morgan's† treatment, and give Fleming's tincture of aconite a fair trial. I fully explained the course of treatment and the special action of the remedy, its dangers as well as its advantages, to the boy's father, and this secured the services of a most intelligent and sensible assistant. Indeed it was very much owing to his indefatigable care, observation, and common sense, that the medicine received the complete trial it did, and that success attended our efforts at effecting a cure.

Often was the case looked upon as hopeless and often did the father's face express disappointment and apprehension, but encouraged by my sanguine expectations of success, and satisfied with my explanation of the principles on

* Deaths after parturition from various causes, tetanus included, are so common, that the announcement of pregnancy having occurred in a respectable Mahommedan family, is heard with fear and dismal forebodings, rather than as we should have expected, with satisfaction and joy.

† Vide article in 46th No. of the Medico-chirurgical Review, page 486.

which the case was conducted, he continued to give his best efforts to secure the success of the treatment. The lad was carefully watched all day and night; the record of every visit being kept. From these notes the abstract of the case given above has been drawn up.

Perhaps my professional brethren may think that the account of the case might have been still further curtailed with advantage, but some experience has proved to me how valuable to the practitioner are the details of carefully and clearly recorded reports of medicinal action, especially when the malady is a grave one, and the remedy employed a powerful and dangerous one.

The tincture (Fleming's) used was prepared by Messrs. Duncan and Flockhart of Edinburgh, and like everything supplied by that firm, was fresh and of unexceptional quality. The doses were administered in drops and minims, three of the former having been found, after repeated trials, to be equivalent to two of the latter. The total quantity of the tincture given, during the 17 days of the treatment, amounted to one ounce and twelve minims. The daily quantities administered were as follows:—

1st	day	Tinct. given	♏ 13⅓
2nd	„	do.	„ 8⅔
3rd	„	do.	„ 14⅔
4th	„	do.	„ 2⅔
5th	„	do.	„ 2
6th	„	do.	„ 12⅔
7th	„	do.	„ 49⅓
8th	„	do.	„ 95⅓
9th	„	do.	„ 85
10th	„	do.	„ 60
11th	„	do.	„ 53
12th	„	do.	„ 25
13th	„	do.	„ 40
14th	„	do.	„ 8
15th	„	do.	„ 6
16th	„	do.	„ 4
17th	„	do.	„ 13
		Total	℥ i. & ♏ xii. ¾.

The largest quantity, upwards of one drachm and a half, was administered on the 8th day. The tolerance of the remedy was a pretty sure test of the severity of the disease; as the disease gave way, this tolerance very perceptibly decreased; hence doses which on the 8th,

9th, or 10th days, barely sufficed to hold the disease in check, would have proved fatal had they been given upon the 14th, 15th, or 16th days, when the symptoms were rapidly subsiding. In further illustration of the great tolerance of medicinal action developed by certain diseases, I may mention, that at the very time when this case of tetanus was under treatment, a man was brought to me in an advanced state of hydrophobia. Half a drachm of Fleming's tincture was, with difficulty, administered, and the dose was ordered to be repeated within an hour. Before the second dose could be given the wretched patient insisted upon going home, when the symptoms developed themselves as usual, passing through all their horrible stages, utterly uninfluenced by the large dose of aconite given. Were a case of hydrophobia again to come under my treatment, I should have no hesitation—knowing this tolerance—in giving large doses of Fleming's tincture a fair and decided trial, administering the remedy by the mouth as long as the patient could swallow, and by the bowel when deglutition become impossible.*

The specific effects of aconite as detailed by Fleming, Christison, &c., were all observed in this case of tetanus, for example—numbness and tingling of the lips and tongue; nausea; general warmth and perspiration of the surface; tingling of the fingers and toes; muscular weakness; mental and bodily lassitude; feeble pulse; slow respiration; soreness of the throat and stiffness of the tongue; confusion and dimness of sight; weakness of voice; consciousness being quite unimpared throughout. It was remarked that the action of aconite did not last long, hence the necessity experienced of repeating the doses every second or at most every third hour. Cessation of tetanic action, more or less distinct, took place soon after taking a dose; but though the action of the poison on the general system continued for some time, its specific influence upon the disease appeared soon to pass away.† Aconite, it may be remarked, in passing, is not a cumulative poison like digitalis.

I observed nothing to warrant the idea that the primary action of aconite is stimulant; on the contrary, from the

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* Hypodermic injection with aconite or atropine, should also receive a fair trial.

† Mr. Sub-Assistant Surgeon Bayley thought that the perceptible influence of the drug on the spasmodic action lasted about one hour.

very first, the sedative action of the drug on the nervous and muscular systems was distinctly pronounced. Spasms subsided; difficulty of breathing from tonic contraction of the diaphragm disappeared; the action of the heart became enfeebled, and the circulation in the brain impaired, whilst a copious and general perspiration broke out upon the surface of the body.

A comparative view of tetanic and aconital action places the antipathic action of the remedy in a strong light.*

In traumatic tetanus, for example, there is the local injury; irritation thence conveyed to the nervous centres; a state of hyperæsthesia or exalted polarity of the nervous centres induced (the brain excluded), whence derangement of nervous function; increase of irritability and excessive development of stimulus compared with the kind and amount of excitement,† thence result tonic spasm of the voluntary muscles, fixation of the diaphragm, excruciating pain from the contracted and torn state of the muscular fibre, and from the consequent crushing of the sensitive nerves, and obstruction of the capillary circulation of the affected parts; followed by exhaustion from pain, from want of sleep, and from disruption of muscular fibre, death occurring by *asphyxia* from spasm, or, by *asthenia* from exhaus-

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* No two states of the system can resemble each other more closely than those dependent upon tetanus and strychnine; nor can any two states of the nervous system be more thoroughly antagonistic than those induced by tetanus and aconite. Strychnine has been fairly tried in the treatment of tetanus and has signally failed. Aconite has been tried and the results are before the profession. Aconite and strychnine in their specific action on the system appear to be as antagonistic as are opium and belladonna; a fact which should be borne in mind in cases of poisoning by either of these potent remedies.

† Should Dr. Radcliff's views prove to be correct as detailed in the Gulstonian Lectures for 1860, published in the "Lancet," our views regarding excessive development of nervous stimulus and the causes of muscular contraction and elongation, will undergo a change. His conclusions are briefly as follows:—

1st. That there are electrical currents in living muscle and nerve.

2nd. That rigor mortis does not occur till they cease.

3rd. That these currents are weakened in ordinary muscular contraction.

4th. That contraction is induced when the nerve current is weakened by the action of a galvanic current on nerve.

5th. That contraction is not produced when the nerve current is strengthened by the action of a galvanic current upon nerve.

"In a word, the needle of the galvanometer appears to shew that muscle *elongates* under the action of the muscular and nerve current, and that muscle *contracts* when this action is weakened or extinguished."

tion, or, by *syncope*, from sudden cessation of the heart's action.*

Aconite, on the other hand, alters the character of the local irritation, and then abolishes it altogether, the tingling being followed by numbness; it acts moreover as a direct sedative of the nervous centres (Cerebrum excluded) diminishing their polarity and inducing a state of anæsthesia; hence impairment of the excito-motor and vaso-motor, as well as of the voluntary systems of nerves—whence result, muscular weakness, paralysis of the diaphragm, entire suspension of spasm, paralysis of the capillaries and general exhaustion, eventuating in death by *asphyxia* from paralysis, or by *syncope* from shock.

The effects of aconite must be closely watched, and the state of the pulse especially should be frequently and carefully noted. It appears to me that the remedy may be continued so long as the pulse continues regular, and does not fall below 50 beats per minute. The practitioner should bear in mind also the tendency to syncope from exhaustion, which *equally* results from tetanic and aconital action, and should ward this off by the free use of nourishing broths and enemata, as well as by moderate quantities of stimulants. The most stringent orders regarding rest and perfect quietness must be given. All external causes of excitement must be removed; fluids should be given lukewarm.

Neither tetanus nor aconite affect the functions of the cerebrum, hence though much exhaustion results from want of sleep† neither drowsiness, nor delirium occurs.

Beyond the effects detailed, aconite exhibits little or no influence upon the general functions; the appetite continues good, the action of the bowels and secretion of the kidneys remain unimpaired, whilst the cerebral functions are, as has been remarked, entirely unaffected. In the case reported health was reinstated on the subsidence of the disease, and cessation of the medicinal action.

Aconite has many advantages over woorari, opium, belladonna, cannabis, tobacco, conium, and chloroform in the treatment of tetanus, and certainly deserves a fair trial at the hands of the profession. The only fear is that it may be simply prescribed and its administration entrusted to

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* Dr. Todd remarks that death does not take place from asphyxia, but from general exhaustion alone—Vide Lecture 18, p. 418.

† To remedy this I gave Liqr. Opii. sedativus with good effect.

those, who, unfamiliar with its action, may give it when it ought to be withheld, or withdraw it when it ought to be pushed.

The patient should be seen by an intelligent and cautious observer every 2nd hour day and night, till the severity of the disease shall have fairly passed away.

"Acute tetanus," says Dr. Todd, "is always fatal." Chronic tetanus is susceptible of cure. The case recorded was not one of chronic tetanus. Some may deny its claim to be ranked as an acute case, and may suggest the term *subacute* as more accurately expressing its nature; to such view, I am inclined to assent, with this proviso, however, that had the disease been left to run its course uninfluenced by medicine, it would have terminated fatally on the 8th or 9th day, reckoning from the commencement of the symptoms of trismus.*

I observe that the hypodermic injection of atropine has been used with success in the treatment of tetanus by M. Pescheux; in similar cases aconite might be given in the same way. This mode of administration has much to recommend it, especially in cases where deglutition is difficult or impossible.

The more closely we study the physiology of the nervous and muscular systems, as well as the nature of diseases of the nervous system, and the effects upon them of powerful remedial agents, the more likely will we be to find remedies for diseases which at present tax all our patience and credit, some of which are among the most painful and distressing of the ailments to which the human system is liable.

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* I have not overlooked the practical remark made by Dr. Todd in his lecture on Trismus, page 417—Why *must* acute tetanus *always* terminate fatally?

Art. V.—*Micrological Notes on the progress of Human minute Anatomy during the last few years.* By Samuel Martyn, M.D., M.R.C.P., Physician to the Bristol General Hospital. Lecturer on Physiology in the Medical School. President of the Bristol Microscopical Society.

It must be premised that the following "Notes" do not profess to include *all* that has been done for Histology during any exact period of time, still less to exclude much that may hereafter be successfully refuted. Such an attempt would certainly prove a failure, as any student of this science knows, who has in the least degree followed the researches made during recent years in Germany, Holland, France and England. From 1857 to 1860, an extraordinary number of new points have been taken up, or old ones reopened, by trustworthy observers; and so minute have been the mutual criticisms, that to unravel them would be hopeless. As to many important discoveries it is impossible that priority of claim can ever be rightly decided. In Germany, for example, papers of great length are incessantly coming to the hands of Editors, who, when opportunity offers, publish them; but in periodicals appearing at the most irregular intervals, and without exact dates. Discussion in regard to every point is carried on with endless tenacity and verbiage; while very often the actors who figure for the moment on the stage, are by no means the real workers: these are silently, and behind the scenes, pursuing investigations, with regard to which no conclusions are in reality ripe enough to be announced. Thus it is impossible, in a résumé like the following, to do justice to individual observers; either as to a just estimate of their merits or as to the priority of their respective claims.

The object has not been therefore so much to produce what should appear complete and systematic, as what should certainly prove useful and available.

An important department of Periodical Medical Literature is the review from time to time, of the position, the *status quo*, of a constantly advancing science. To the actual worker it is of immense importance that he should be au courant with the literature of his subject, and the most recent investigations; and this is more than ever the case now that books are so multiplied, and the very text-books

of three or four years ago are next to obsolete. It has been thought best to restrict this particular article to human physiological anatomy of a minute and mostly microscopic kind. Observations, or experiments on lower animals, and even pathological memoranda, when the above was their object, have not, however, been denied admission. As to the organs of the special senses, the length of certain monographs, and the absence, on this occasion, of illustrations, have almost excluded them from the report.

It is in the spirit of the above remarks that the following notes are submitted to the readers of the "Madras Quarterly." To the controversialist they will probably appear far too meagre, but to the serious enquirer, and the independent microscopical observer, they will, it is hoped, serve as landmarks, by means of which he may more easily follow this channel of scientific enquiry.

CELLS, AND TISSUES CONSISTING OF CELLS.

In 1857, *Leydig* formally joined *Remak, Kölliker* and the others, who hold that intercellular substance is a separation of matter from and by the cell. [Leydig, "Histologie."]

Henle continued his opposition to the Würzburg School of physiologists, and thought that, like former "false gods," the blood for instance, or blood vessels, or nerves, the "almighty," cell would be also given up! If the cell, said Henle, has a metabolic influence, why must matter be brought *into* it before being laid down, as influence might as well happen *through* the cell wall? If the cell be surrounded, the new matter must go through the tissue to the cell—another difficulty. [Henle and Meissner's "Bericht," for 1857.]

In 1858, the important work on "Cell Pathology," by *Virchow* gave, for the first time, a simple and collected statement of his doctrines, which for years have engaged the thoughts of serious workers, and are of as much value to the Physiologist as to the Pathologist himself. [Virchow "die Cellularpathologie," etc.]

In the first 20 pp. of the annual "Bericht," issued in the year 1859, *Henle* replied at length. The following is something like a summary by him of modern cell-attributes. 1. Cells and especially the branched corpuscles of connective [fibrous] tissue, are supposed to conduct the juices. Now to suppose this in the loose areolar tissue is surely superfluous, while, in firmer tissues, there are fewest pro-

cesses from cells ; in bone or teeth alone these being required. If, in cartilage, the juices can pass from one open cell cavity to another, why should canals be required? 2. Cells are believed to be centres of nutrition, which draw material from their neighbourhood to act on, and distribute again. But, says *Henle*, we once believed that blood-vessels did this, and the idea of a plasmatic circuit through a cell is only the old idea extended. 3. Cells are supposed to respond to influences from without, and *Virchow* sees in them "active and passive" processes. A cell which enlarges and begets a family appears to be active and "getting on;" a cell abounding with fat has a passive air. To this view *Henle* objects as "romantic" it being impossible to conceive a choice on the cell's part, or excitement by one thing and depression by another. All cells only obey their original tendencies plus their present circumstances. The influence on the cell is an important and unstudied factor.

On the whole, with regard to these questions, as well as the important one so long supported by him of free cell formation (exog.), we shall not be unfair in stating that *Henle* appears rather driven into a corner. [Henle, "Bericht" *passim.*]

In 1859, an unexplained phenomenon was thus recorded by *Dr. Addison* in the Gulstonian lectures. If a solution of two grains of salt and one of carbonate of soda in half an ounce of water be used, and one drop of this with two of sherry placed close to a small drop of blood on the slide, and then think glass allowed to drop so as to mix them, a series of curious changes takes place in the blood cells. These, in about half an hour, throw out loose molecules, or long, clubbed and waving processes, which often become detached. [Addison, Gulstonian Lectures for 1859.]

Brown-Sequard injected blood from the fowl and pigeon into the venous circulation of dogs, cats and rabbits. He found that the oval corpuscle had disappeared in the course of a few hours, and could no longer be discovered even in the internal organs. In the reversed case, however, the disc shaped cells of mammals, transfused into birds, might be found after the lapse of weeks. [Journ. de la Phys. 1858.]

Draper added an observation tending to confirm Kölliker's theory of the destruction of blood cells in the spleen. Having dried drops of blood taken severally from the spleen and from an artery of the frog, he photographed them, and counted, in the former case, 83 per cent. in a perishing, ruined

state, in the latter 40 per cent. only. [New York Journal of Med. 1858.]

Rindfleisch and *Weber* examined the formation of pus with great minuteness, in 1859. In the cornea of the frog, suppuration was observed by the former to take place by means of the corpuscles of that true connective substance. The cells enlarge, parallel to the free surface; their nuclei are seen subdividing; the oblong masses then divide in the hour-glass way, and become agglomerations of true pus corpuscles. [Virchow's Archiv.]

EPITHELIUM.

Henle having, some time previously, drawn attention to a peculiarly bright, free border, possessed by the columnar epithelium of the small intestine,—*Kölliker* discovered, in 1855, that this border was marked by a very fine series of vertical striæ; and that, if the columnar cell was seen from the end, this was marked with a delicate dotting. These striæ were called "pore-canals." In 1856, *Donders* and *Funke* confirmed this discovery; and, from observations on rabbits and frogs, adopted the view that the striæ were canals, in which they even saw granules. [Donders and Funke, Nederl Lancet, No. 5, 6.]

In the same year *Stilling*, in his "Bau des Rückenmarks," described the epithelium known to line the canal in the centre of the spinal marrow. The cells are of the ciliated variety, and the ciliary processes either club-shaped, blunt, or obscure, occasionally; while their thin ends may be prolonged. [Stilling, Bau des Rückenmarks.]

In 1857, *Funke* observed that "pore canals" are placed in a circle round the end of the columnar epithelial cell, the central part of the said end being thin. He doubted their being canals and believed they indicate a splitting, more allied to ciliary formation. Other observers likened the border to a congeries of rods rather than pores, and *Virchow* figured a marked instance of fibre-like splitting in the border of epithelium from the gall bladder. [O. Funke, Lehrbuch der Physiologie.]

In 1858, *Gerlach* described the ciliated epithelium lining the aquæduct of Sylvius, in children. The fine end of the cell was prolonged, and prolonged into either fibres of connective tissue, or nerves. [Gerlach. "Microscopische Studien aus dem Gebiete der menschl. Morphologie."]

Billroth found a similar appearance in the frog's tongue. [Billroth, Müller's Archiv, Heft 2, p. 159.]

Stilling, with his usual rather hazardous generalization, supposed all connective tissue in the body, as e. g. between the muscles and elsewhere, to be a continuation from the epithelial cells of the great free surfaces.

Henle believed that these and many other such "processes" from cells have of late been products of preparation, and noted such results from the use of chromic acid. [Henle. "Bericht" for 1858.]

Kölliker declared however in favour of the processes, but described them as flat, and thread-like, because seen in profile. [Kölliker, "Gewebel."]

Lambl and *Amici* opposed the view of *Kölliker* and *Funke*, as to the pore canals of cylindrical epithelium. They, the former observers, believed them to arise from optical illusions, and to be really expressive of a raised border, altered by being seen with inferior instruments. *Funke*, however, repeated his views as before, and with one of *Amici's* microscopes. He was further confirmed by some elaborate researches of *Friedreich* into the epithelium of the gall bladder. [Wien, Med. Wochenschr. 1859. Schmidt's Jahrbüch. 1859. Virchow's Archiv. Bd. XV.]

Burkhart described very minutely the arrangement of epithelium on the urinary tract. From the openings of the tubuli throughout, down to the urethra, he finds three layers of cells presenting various transitional states. The lower layer directly continuous, as to the long cell processes, with the subjacent connective tissue. [Virchow's Arch. Bd. XVII.]

Lockhart Clarke examined the epithelium of the central canal in the spinal cord. He found the cells fusiform or prolonged, but differed from Stilling in thinking that the taper endings of the cells were not attached to nervous structures, as e. g. fibres. In the *filum* there was a highly developed epithelium, but it continued *after* the disappearance of both nerve cells and fibres. [Phil. Trans. 1860.]

CONNECTIVE SUBSTANCES.

Since *Reichert's* generalization, in 1845, nothing of so great importance has been done. A type is now acknowledged, to which those substances belong, which either support the fabric of the body, or envelope its various parts. To this type must be referred therefore the connective tissue proper, ("white fibrous" of former writers;) elastic tissue; the bones; teeth; cartilage; coverings of the body, as the true skin, and all submucous tissue and gelatinous tissue;

the fasciæ; and special sheaths of muscles, vessels, nerves, or glands.

In 1858, about twenty authors made observations or advanced theories of importance, with regard to this element, but it does not seem to have occupied the attention of any English Histologist. [See Henle and Meissner's Bericht. for 1858. Art. "Bindegewebe."]

According to *Virchow's* view, the "connective" type of arrangement is that cells occur at certain intervals in an intercellular mass. The cells always vary in shape in the same tissue. In some kinds of tissue, in common connective, bones, tendons, and certain gelatinous structures, the cells elongate, branch and unite into what must be a permeable system of canals. The intercellular substance may be structureless as glass (in cartilage), fibrillated (in common connective), fibrous, or a jelly, &c., but the *chemical* is the true difference. The development of connective is the modification of a basis substance, while the cells branch and become permanent. (Virchow, above mentioned work; and his Archiv. from the beginning.]

Rollett described, also in 1858, a mode of preparation after which pressure will resolve the bundles of common connective into fibrils. He macerated it in lime water for six or eight days, and this dissolved out the interfibrillar glue. [Rollett "Ueber die Structur des Bindegewebes" (Sitzung's Bericht. volume xxx. Wien)].

Henle stated, in the year 1859, that he thought *Virchow* and *Reichert* had overridden their worship of these cells, and thrown over the intercellular matter; whereas *Kölliker* had extended the actual group of connective tissues to anything with an interstitial substance, and any sort of cell. *Henle* himself held that the glue yielding tissues began with corpuscles, (not hollows or capsules) in a structureless basis. This basis then altered,—became striated or cloudy, &c., and then the corpuscles having increased fissiparously, the basis developed in quantity, and the cells became like vestiges of fœtal organs, obsolete. All they do is to preserve the interstices. The basis might become capsular as in cartilage, or elastic fibres might arise; these elastic fibres might also arise from partial absorption of homogeneous lamellæ round bundles or cells, and were sometimes processes from cells. He said the star shaped corpuscles of tendon, the corpuscles of common connective, and the corpuscles in the cornea, were interfascicular or interlamellar spaces and gaps. So,

if a pus cell be formed in one of them, he would not believe that it was in a cell of the connective, but rather in a gap *with* a corpuscle of connective. [Henle's Bericht.]

A summary of the great leading theories was given in the year 1859 by *Kölliker* somewhat thus: *Remak:* The basis of connective substance is developed out of an outer secondary membrane of the cell, and there is no intercellular substance at all. *Reichert:* Basis of cartilage intercellular; of connective developed out of roundish long cells and a substance between them, blending. *Kölliker* and *Sharpey:* The basis of cartilage is mostly intercellular, but partly formed from an outer cell wall; it is, in common connective, formed by fusiform cells, along with which, in certain cases, there is an intercellular substance. *Donders* and *Virchow* believe the basis to be intercellular, not developed out of cells. [Kolliker, "Gewebelehre," 1859, Trans. 1860.]

BONE AND CARTILAGE.

Were anew discussed, as to their true structure and development, in 1859, by *Benecke.* The most important of his conclusions was that bone corpuscles and canaliculi really are, as was formerly supposed, a communicating system of hollow canals, not arising from cells and cell processes, but from fissures and spaces, which originate around a nucleus. He never had succeeded, like *Virchow,* in isolating the fully formed bone corpuscle. [Arch. f. gem. Arbeit, Bd. IV.]

Rainey published a paper on the structure and mode of formation of dental tissues, according to a principle of "molecular coalescence." Molecules were seen to arrange themselves in masses and in rows, giving origin to a fibroid structure both in dentine and enamel. [Mic. Journ. 1859.]

In 1860, the connective tissue theory became extensively known in the British Isles, in consequence chiefly of the appearance of a new "Manual of Human Microscopic Anatomy," by *Kölliker,* and also of a translation, by *Chance,* of *Virchow's* recent lectures on "Cellular Pathology." All the Reviews took up the subject. In Germany most of the well known writers on this topic continued what had become a very complicated discussion. The actual observations made were however but few, and almost entirely directed to confirm or refute the *Virchow—Kölliker—Donders* view. *Virchow* maintained his position as to the cells of connective tissue forming an "intermediate juice channel system," by means of the inosculation of the radii of star

shaped cells. [Med. Chir. Rev. and Beale's Archives, 1860. Canstatt's Jahresber, 1860.]

MUSCULAR TISSUE.

In 1857, *Kölliker* prosecuted his discoveries as to the nature of smooth (or involuntary) muscle in mollusks and radiate animals, confirming his researches in the human subject, and establishing that a fusiform and nucleated cell is the rule. The ends of the cell, according to the class, or animal examined, may be sharp-pointed, broad and rounded, obliquely truncated, forked, or with lateral branches. [Kölliker. Würzburg. Verhandlungen, Bd. VIII. p. 109.]

Brücke described an interesting series of independent polarizing properties possessed by the ultimate sarcous particle. [Denkschrift d. k. Akad. Wien. Bd. XV.]

On the question of fibrillæ, *Weber* and *Henle* still felt certain of their existence *as such*. [E. H. Weber, in Funke's, Physiol. 2 Aufl.]

Rollett described varieties in position of the permanent nuclei in primitive fibres. In the heart of several animals the nucleus lies deep amongst the fibrillæ, otherwise mostly on the sarcolemma. His discovery of fibres pointed at both ends was in striking agreement with the view of their formation held by *Lebert*, *Remak*, and *Kölliker*, viz., that each fibre is the result of a single embryonic cell. [Rollett Proc. Akad. Wien. *Passim.*]

In 1858, *Weber* and *Herzig* confirmed *Rollett's* discovery of pointed ends, and demonstrated also, besides fusiform, truncated terminations. They denied *in toto* the generally received opinion that muscle and tendon fibres are continuous. [A. Herzig. Spindelförmige Elemente quergestreifter Muskelfasern. Wiener Sitzung's Berichte. Bd. XXX. No. 13.]

There also appeared an important paper on muscular fibre by *Amici*. He stated that, after seeking a test object for his microscopes for the last thirty years, he had concluded that recent muscular fibre from the fly's leg was the best. After describing the structure very minutely, he proceeded to state his belief that the fibrillæ of higher animals (analagous to the fibres in the fly) are really tubes divided by diaphragms. He thought the drawing of *Lealand's* preparation in *Quekett* the best of all, and approved the description that dark and light particles alternate, with a line crossing between the dark ones; but differed from his opinion, that this indicated a row of cells "with dark central masses ex-

tending to their sides." His own view was that the fibril contained masses, alternately more and less highly refracting. The dark mass is grooved lengthwise (expressing a fibrous structure) like that in the fly's fibre, while the light space is crossed by a line which may be resolved into dots expressing the grafting together (annestatura) of the longitudinal fibrous masses. (!) He decided against *Huxley's* view that the complex picture in the fly is a *fibre*, not a fibrilla, by showing that the ultimate fibril in mammalia is analogous, and that the said structure in the fly is not again divisible. With great deference to *Amici*, the compiler of these notes cannot but feel that, though right in his observations, he is wrong as to inference. His "fibrils" from the lamb, are evidently *bundles of fibrils*, in which the stretched sarcous particles have become linear, with dots in the interspaces, a dot for each fibril. No wonder he assumes therefore that a picture so like it from the fly must be a fibril too. But, as *Huxley* believes, it is nearer the fibre in character, though indivisible. [Amici, in "Il Tempo. Giornale di Medicina."]

H. Müller announced the discovery of muscular fibres, probably of a smooth kind, in the choroid of the human eye. They were extremely difficult to see, and most readily made out in certain streaks which accompany the ciliary arteries, and by the aid of pyroligneous or nitric acid. [Würzb. Verh. Bd. IX.]

Margo showed that transversely striated muscular fibres grow, in their length, by nuclear division at the ends of the fibre; in their thickness, by a new formation of what he calls "sarcoplasts," *i. e.*, nucleated fusiform masses of sarcous matter. He believed the smooth muscle to have sarcous particles like the transversely striated, but smaller and less regularly arranged. [Sitzung's ber. d. math. natur. Cl. d. Akad. Wien. Bd. XXXVI.]

G. Schmitz in a series of researches on the muscles of frogs, in which he counted the single fibres, came to these conclusions: that the growth of muscle is accompanied by the formation of new fibres; and that in atrophy of a muscle, the number of fibres is not lessened. [Rev. in Virch. Arch. 1860.]

NERVE TISSUE.

In 1857, the great controversy in reference to the organic, or sympathetic, or ganglionic fibres, as to their nervous or non-nervous character, was continued by *Leydig, Volkmann, Schultze* and *Bidder*. [Leydig, "Histologie;" Volk-

mann, Virchow's Archiv, Bd. XII, Hft. 1 ; Schultze, Abhandlungen der Naturf. Gesellschaft in Halle, Sitzung von 28th November.]

Jacubowitsch confirmed the various assertions which he, and also *Owsjannikow*, had made in the previous year; so that, according to him, nerve cells are,—1, Motor: that is, large and with from one to eight thick processes; found in the cord, cerebellum and corpora quadrigemina.—2, Sensory cells ; smaller, fusiform, and with usually three and never more than four processes. [In the cord these cells extend here and there into the anterior columns.] 3. Sympathetic cells ; these have two very fine processes, and are themselves divisible into two varieties. He also attributed the various greys and browns occurring in the brain, &c., to the presence and number of vessels. [Jacubowitsch, Mittheilungen über die feinere structur des Gehirns und Rückenmarks, Breslau.]

Bidder denied the existence of a cell wall for ganglionic cells, and also that apolar cells ever occur, or cells with more than five processes. [Bidder Unters. über die Textur des Rückenmarks, und die Entwickelung seiner Formen Elemente. Lpz.]

Oegg continued the researches of *Purkinje* on the grey matter of cerebellum. He reasserted the existence of an outer layer of cells, and an inner of granules. These latter were fine and spherical, corresponding exactly with the granular layer of the retina, and penetrated by the fine branchings of the white substance. The cellular layer sent off processes, some inwards towards the granules, and some outwards to a finely granular basis on the surface.

Stilling made a series of experiments with sections of the cord and nerves, and concluded, in opposition to *Kölliker* and others, that the nerve fibres do not pass up to the brain. [Stilling. Neue Untersuchungen über den Bau des Rückenmarks. Lief. II. III. Atlas.]

Jacubowitsch made the startling assertion that the nerve cells were destroyed in animals' brains and cords, after death by the narcotica. [See above.]

Stilling described an extraordinary network of minute fibres situated in the medullary part of nerve tubes, in the spaces between them, and in nerve cells. *Henle* and *Jacubowitsch* both saw double nuclei in the cells of grey matter. [Stilling (see above).]

The granules, so called, of the cerebellum (above men-

tioned), were discovered to exist in the white part of the convolutions of the brain itself, by *Gerlach*. He recognized their analogy to the retinal elements, and described them as true cells, strung upon the finest divisions of the nerve fibres, or on processes of multipolar cells, each granule having its afferent and efferent nerve fibre. He showed that they become fewer amongst the cells of the grey layer of the convolutions and colour intensely with carmine. [Gerlach, "Studien," Erlangen.]

Lockhart Clarke developed his observations of 1851 as to the white part of the cord, and direction of its fibres. ["On the Anatomy of the Spinal Cord," Archives of Medicine. No. III.]

Lenhossek and *Kölliker* worked on in the same field, but their views are too complex to condense. [T. v. Lenhossek "Beitr. zur Erörter. d. histolog." Verhältnissen des centralen Nerven systems. "Wiener Sitzungsber." Vol. XXX. p. 34.]

Schroeder v. d. Kolk believed he could show an anatomical explanation of *Brown-Sequard's* position that the sensitive roots decussate in the cord; and that processes of cells in posterior cornu ascend and cross through the commissure. [Schroeder v. d. Kolk "overhet figuere zamenstelen," &c., Amsterdam.]

Owsjannikow stated his entire disbelief in the assertion of *Jacubowitsch* as to narcotic poison occasioning the breaking up of the nerve cells and their processes, believing rather that it was a mistake arising from bad preservation of nerve tissue in chromic acid. [Owsjannikow, "einige Worte über die Mittheilungen des Hn. Dr. Jacubowitsch." Virchow's Archiv. Vol XV.]

In 1859 *Messrs. Lister and Turner* found that if sections of nerves or the cord, hardened by chromic acid or boiling, be treated with ammoniacal carmine, the axis cylinder becomes tinted, and also the interfibral connective. The medullary sheath remains untouched. *Mr. Lister* saw the fibrous network in the medullary sheath described by *Stilling*, and believed it to be an "arborescent aggregation of fatty matter," probably of margarine. [Lister and Turner. Micros. Journal. Oct. 1859-60.]

Berlin examined the grey matter of the brain by the aid of chromic acid and ammoniacal carmine. He described the arrangement of coarse and fine fibres close to the grey matter. The grey matter he showed (as was previously

known) to have six layers. Into these the fine nerve fibres enter in bundles, as also larger single tubules, these latter splitting at acute angles. All penetrate, as they become finer and finer, to the 5th or even the 6th layer. [Beiträge zur &c., Erlangen, 1858.]

Lockhart Clarke made a series of researches into the obscure cellular elements, long known to be scattered between the fibres of the spinal cord. He found them to be very extensively distributed, and although apparently identical in structure with the smaller nerve cells, believed them to belong to the connective tissue. That they are so seemed very probable, from the fact of their being attached to surrounding structures by fine filaments, and exchanging the character of cells for that of nuclei in the adult. [Phil. Trans. 1858-59.]

Krause continued his observations on the peripheral terminations of nerves of sensation. The well known "corpuscula nervorum terminalia bulboidea" he showed to consist of nucleated sheaths of connective tissue. In their centres, contained within a cylindrical, brilliant substance, was the axisband of the nerve. [Hannover, 1860.]

VISCERAL STRUCTURE.

In 1858, *Billroth* demonstrated anew the structure of the tonsils in dogs, and also in man. They consisted of closed follicles, in which a net work of fibres contained the lymph-like corpuscles within its meshes. The human tonsil was not covered with papillary mucous membrane, but with pavement epithelium simply. [Müller's Archiv. Hft. 2].

Luschka described the glands of the gall bladder as being truly conglomerate, from 6—15 in number, and about one millᵗʳᵉ in diameter. They lie in the submucous tissue, and as their ducts may readily be occluded by detritus, the origin of cysts in this situation is accounted for. [Deutsche Klinik.]

Beale, denying the existence of branched fibre-cells in the stroma of the kidney, explained the fibrous character of certain appearances to result from folds in the vascular walls, or those of tubuli uriniferi. The interspaces of the kidney he showed to be filled with a finely granular substance containing sparse nuclei. [Archives of Med. III.]

Kölliker maintained that vasa efferentia from the inner glomeruli of the cortical part of the kidney, pass off into arteriolæ rectæ; and that there are arteriolæ rectæ of much smaller size than is usually supposed. The fact, that all

glomeruli are frequently injected, while the medullary vessels remained empty, did not speak in favour of a direct arterial supply to the latter. [Gewebel.]

Schröder v. d. Kolk carefully observed the structure of the lung in birds. His conclusions were opposed to the well known one of Rainey, that the ultimate air cells are hollowed out between bare capillaries. He found that air passages do indeed communicate with each other throughout the lungs, and end on their surfaces; but that the capillaries are everywhere supported by a network of fibrous structure, which is covered with a delicate epithelium. [Archiv. für. Holland. Bd. II. 1859.]

Henle reviewed the structure of certain glands: viz., the solitary, Peyer's lymphatic, Malpighian of spleen, tonsil, root glands of tongue, conjunctival and thymus. All these he calls "conglobate," and described them as exhibiting spheroidal corpuscles, in clumps, and lying in meshes of areolar tissue, the whole surrounded by vessels variously arranged. The corpuscles varied in size and shape, and contained nucleoli, besides occasionally showing "subdivision." [Henle and P., Zeitschrift, VIII. 1860.]

Böttcher discussed the structure of the closed follicular glands near the root of the tongue, and decided them to be glands with ducts, these being, however, temporarily obstructed. [Virch. Arch. 1860.]

ART. VI.—*Annual Sanitary Report of the Station of Thayet Myo, for* 1858-59. By J. L. RANKING, Esq., Ex-Officio Sanitary Officer. *(Communicated by the Principal Inspector General, Medical Department.)*

PRIOR to the promulgation of the order by His Lordship the Commander-in-Chief in India, constituting the senior medical officer of every station ex-officio Sanitary Officer, Sanitation can scarcely be said to have had any existence in relation to this cantonment.

It is true that medical and commanding officers in their several charges and commands, adopted many sanitary precautions, suggested by the great sickness which prevailed amongst the troops in 1857-58, but no system of sanitation, as applied to the *station*, had any existence.

The General Order above alluded to, inaugurated a new era and system, which, spite of the limited powers (if *powers*

they can be termed) conferred upon sanitary officers, promises well for the future maintenance of a higher standard of health amongst the troops of the Indian Empire. Representation (which constitutes all the power possessed by the sanitary officer) when properly made, and duly appreciated by the chief military authority of any station, acquires almost the importance of an authoritative order.

It is not, however, so much "representations" and even sanitary rules and regulations founded upon such representations as are required; as *means* to carry out sanitary measures. Money must be liberally sanctioned ere the health of the troops of many of our cantonments can be pronounced to be efficiently protected against the influence of those numerous causes of disease, which sanitary science has declared to be remediable.

It is my duty to record for the information of the Director General, the steps which have been taken in this station, to carry out the objects comprised in the Commander-in-Chief's order, and in reference to the Director General's circular letter, No. 1851, 24th December 1858.

Prior to the receipt of that letter I had assumed the privilege conveyed in the general order, and put myself in communication with the Brigadier commanding, on the subject of reclaiming a large tract of periodically inundated land in the vicinity of the cantonment. Immediate attention was given to my representation, the executive Engineer was furnished with a copy of my letter, and directed to offer his opinion on the subject.

That officer considers the rain-fall itself sufficient to flood the area, irrespective of the river flood; but nevertheless suggested that a practical trial be given to the scheme, and proposed to combine a sluice with the bridge hereafter to be constructed across the nullah.

It is possible, judging from the present monsoon, (12 inches of rain having fallen between the 1st and 18th of the present month—June,) that the executive Engineer is right, and provided rain falls to a large amount at the same time that it becomes necessary to close the sluices, that the area would be nevertheless flooded.

However this may be, the vital necessity of reclaiming the swamp still forces itself upon the attention. The Brigade Major, Captain Longcroft, suggests the formation of an artificial sheet of water by deepening the hollows near the head of the nullah, and thus forming a tank sufficiently large

to receive the drainage of the swamp during the periods of closing the sluices. The plan is certainly feasible but probably expensive. I am however of opinion that the swamp should be reclaimed at all cost, and would suggest that it be done by employing working parties of the troops.

The next subject brought to notice was the state of the water supply, and the pollution of the river from various sources. Immediate attention was paid to the suggestions made by me, and they were as far as practicable carried out.

My next duty appeared to consist in the preparation of a minute upon the sanitary condition and requirements of the cantonment. This minute will be found at the close of this report.

I would particularly solicit the Director General's support in the matter of the employment of working parties of the troops upon sanitary works. I do not hope to see the system adopted unless an order be issued by the Commander-in-Chief directing their employment thus, and sanctioning the usual working batta.

At this station, and in Burmah generally, cooly labour is so costly, that the expense of carrying out works of any kind is very great; if, however, the troops were employed as sappers, all the cantonments of our army might be materially improved, and an efficient system of sanitary measures be elaborated.

The whole subject of sanitation at this station is now before Brigadier Osborne, an officer not only fully alive to the merits of the science, but conversant with its principles. Under his authority therefore, we may hope for the gradual development of as complete sanitary measures, as the means at his disposal will allow.

Expenditure, however, must be sanctioned with no grudging hand, and the money spent will doubtless yield a remunerative rate of interest, in the reduction of sickness and mortality amongst the troops.

Up to the time I write, the force (native) comprising this garrison, has lost 314 men by death and 920 by "sick transfers" since its advent to the station. The deaths may be said to bear a ratio of 10 per cent. *in excess* of the ordinary mortality of the sepoy army. The "sick transfers," must have put the State to great expense. Each man sent to Madras costs the Government 20 rupees for "passage," independent of the loss of his services; a large per centage also will rejoin their regiments, entailing a return passage cost of Rs. 20 per man.

Hitherto 920 men have left this force sick, and so small a per centage have returned from Rangoon, that they may fairly be left out of the calculation—920 passages then will have cost 18,400 rupees, allowing also that one half have rejoined or will rejoin before the next relief—27,600 rupees may be given as the cost of passage only.*

The excessive mortality and sickness above shewn, is not entirely owing to the climate of this station, or to defective sanitary arrangements, still there can be no question that much of it has arisen from remediable causes, and that a well organised system of sanitation would materially reduce sickness and mortality, and thus save a great item of expense to the State, more than commensurate probably with the outlay upon sanitary works—provided they be executed by working parties of the troops.

Minute upon the Sanitary condition and requirements of Thayet Myo.

1. Thyet Myo is well favoured, and in possession of many natural advantages, as relate to sanitary conditions.

2. The *ground* is high, and undulating, the *soil* generally light and absorbent, consisting of sands, gravel, and loose sandstone rocks.

3. The *water supply* is abundant, partly derived from the river, and partly from certain wells, in which drinking water, of excellent quality, is obtained at moderate depth.

4. The *roads* are capable of being made excellent, gravel of good binding quality being abundant in many localities within the area of the cantonment.

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* The great amount of sickness and mortality of Native troops in Burmah, is, we believe, attributable not so much to the sanitary defects of the various stations, as to the system of rationing, which permits the sepoy to sell, or dispose of the food provided for him by a liberal Government. Sepoys when on service in Burmah or the Straits, are rationed at Government expense, but the desire for saving money is so general amongst them, that they frequently sell the marketable portion of their rations, and starve themselves, until they become weakly emaciated creatures, and easy victims to disease. Next to saving money, the sepoys' great desire is to be sent back to India, on sick leave, and they have often been known, deliberately to qualify themselves for such indulgence, by a course of semi-starvation. Under these circumstances it is not to be wondered at that the "sick transfers" should have been very numerous. The remedy for this evil would appear to be the establishment of local corps for service in these Provinces, where the men might have their families with them, and enjoy the comforts of domestic life. As regards European troops, in Burmah, they, as a rule, enjoy better health than their brethren in many of the old established stations in this Presidency.—Ed. *M. Q. J.*

5. The *conformation* of *the surface* is favourable to *drainage*, while the soil as above stated is highly absorbent.

6. But although the cantonment is thus highly favored by nature, there are many points connected with the physical conditions just alluded to, in which these natural advantages are not turned to the best account.

7. Tracts of low land periodically subject to inundation by the river, and thus constituting prolific sources of malaria, exist in the immediate vicinity, and require to be reclaimed.

8. The water derived from the river, and from which the European troops are supplied is, at certain seasons, (from January to May) contaminated and rendered unfit for use.

9. Trees have been too indiscriminately sacrificed, a point doubtless affecting the rain fall of the cantonment, and thus influencing the climate.

10. The *roads*, although much has been done for them, are capable of further improvement. A more efficient conservancy of cleanliness, in removal of ordure and rubbish is necessary ; while

11. More vigilant control over the purveyors of the common articles of bazaar supply, as milk, butter, &c., is urgently demanded. These subjects will be respectively passed in review, and such remedial measures suggested as may be deemed advisable and practicable.

(a) The reclaiming certain neighbouring tracts of periodically inundated land.—This subject has lately been specially brought to notice. The tract of land referred to presents all the characteristics of a malaria-generating surface, viz., one capable of absorbing moisture, periodically soaked and then dried, and experience has proved that the higher the temperature, and the quicker the drying process, the more virulent is the poison evolved. This swamp should therefore be reclaimed at any cost.

(b) Water supply.—I have already stated that this is derived from the river, and as regards the troops from *one* well. The water from the river after filtration, is most of the year unobjectionable, but from January to May, owing to causes to be presently alluded to, it is liable to be rendered unfit for use, and was pronounced to be so in a letter dated 16th March last. The causes of this contamination are—First, the recent formation of a bank of sand extending the whole length of the front of cantonment, inclosing a pool removed from the influence of the stream and consequently *stagnant ;* second, the presence of vegetable and not

unfrequently of animal matters undergoing decay, as rafts of timber and bamboo, debris of roofing grass, rubbish, &c., thrown in or near the water; and third, till lately (for this source of contamination, owing to the representations made, has been removed) by the ablution of cloths by a colony of dhobies, who had been permitted to locate themselves on the banks of the river, and whose presence there was equally objectionable on other sanitary grounds.

The season is now too far advanced for any steps to be taken in regard to any engineering scheme for the removal of the sand bank alluded to being proposed or executed. The river will soon rise, and convert the stagnant pool into a stream, but in the event of the next floods not carrying away the spit of sand, some steps should certainly be taken, on the subsidence of the water next year, to secure the admission of a stream into the bay, and to remedy the existing evil, for not only does the water become unfitted for use, but the margins of the pool evolve miasma.

For the present, orders have been issued, that all regimental puckallies, and bheesties, procure their supply of water from some locality influenced by the stream. The dhobies have also been removed from the sand bank itself, so that they no longer contaminate the waters of the bay. On the river rising, however, they will have to quit the sand, and return to the river's bank. Their return to their former locality in front of the Commissariat office, should, however, be strictly forbidden. A point below the town has, I believe, been selected for their occupation, but to which they raise strenuous objections, and I understand it is their intention to make a great effort to obtain permission to reoccupy their old locality; to this there are serious sanitary objections, independent of the contamination of the stream, they—*the dhobies*—constitute quite a small colony, and the extent to which the purity of the atmosphere is affected by their resorting to the hollows and undermined portions of the river bank, and the neighbouring nullah for the purposes of nature, can scarcely be exaggerated. I venture to direct particular attention to this point, and to urge the most stringent orders being issued for the preservation of the utmost cleanliness along the whole river frontage of cantonment. (These suggestions have since been fully carried out.) No kind of rubbish should be permitted to be thrown into the water, or upon the banks to be washed away by the rising waters; no bathing or washing should be permitted at

any point above the most southern extremity of the cantonment.

It has been stated that one well at present only exists for the use of the troops, and that is available only for the native portion of the force, and at the present time (April) affords but a scanty supply. Other wells were sanctioned, one I believe for the European regiment, and two for the Native corps, neither of them have yet been commenced; their completion should be hastened.

(c) The more efficient conservancy of cleanliness in and about the cantonment.—This subject is one of much importance, every one must be struck with the general want of cleanliness in cantonment, debris of building materials, portions of ruined fences, masses of roofing grass, heaps of bones and rubbish, sweepings of houses, &c., strew large areas, while the mehters and toties may be seen emptying their utensils in any corners of compounds without any pretension to privacy, and servants resort to any tolerably screened spot, or any unoccupied compound in the vicinity of their houses.

It may not be found difficult to remedy this state of things, and the subject is a legitimate one for the authoritative interference of the chief military authority.

The remedies I venture to propose are as follows :—

1.—Landlords should be held responsible for the due repair of their fences—and for the removal of all refuse matters (the debris of all periodical repairs), or the tenants should be empowered to do the same at the expense of their landlord. 2.—A pit, some twelve feet deep, should be ordered to be provided by each house owner in some convenient part of the compound. Into the pit the tenant should be required to deposit all household refuse, all rubbish, sweepings of houses and stables, &c., and the mehters and toties be required to empty their utensils into it; periodically, say once a week, the contents should be set on fire and reduced to carbon—this would effectually prevent the ill effects of spontaneous decomposition, keep the atmosphere pure, and favour the cleanliness of the cantonment.

The same pit (enclosed with matting and covered with a roof) might also be used by the servants of each establishment as a privy. A pit of this kind, the contents of which are, at short intervals, destroyed by fire, would suffice for a long period, and considering the depth from the surface at

which combustion would go on, no danger need be apprehended from fire.*

The same principle might be applied to privies for the native troops. Long trenches, one for each company, might be dug at the rear of the cooking lines of each regiment, and enclosed in screens of matting, each being periodically purified, by throwing in a few baskets of charcoal and lime (to be indented for by commanding officers), or by the agency of fire.

The introduction of this system would add much to cleanliness and atmospheric purity, and would, I believe, be appreciated by the men, as affording privacy and convenience.

The filthy condition of the area on the outskirts of the native lines, and the intolerable stench therefrom, need not be dilated on.

Another point connected with the cleanliness of the cantonment, is the habit existing of depositing all the refuse and debris of repairs of barracks, &c., on the waste lands and outskirts of cantonment. I lately pointed this out to the Major of Brigade, in relation to the ground lying between the Artillery lines and the burial ground, and which had been made the place of deposit for all the sweepings of the Artillery stables, and all the rubbish removed by the Department of Public Works. The area had thus become strewed with a mass of decaying animal and vegetable matter. Orders were immediately issued for it to be destroyed by fire. It will be necessary to make some provisions for the future disposal of refuse of this kind. It is manifest that it cannot be allowed to be deposited on the outskirts of cantonment without danger of serious results from contamination of the air.

The question is, how is it to be disposed of? Two plans have been suggested. One to throw it all into the nullah bounding the cantonment to the northward, to be carried away by the first freshets; second, to deposit it in a large pit or pits, and cause it to be destroyed periodically by fire. To the first plan there is the objection that the nullah alluded to is *above* the cantonment, and consequently that the

* We should be glad to learn whether this suggestion is practicable. Is it proved that combustion would be sufficiently active, at the bottom of a pit, 12 feet below the surface? The efficient and economical disposal of the refuse of our large cantonments and native towns, is a question of vital importance, now that it is pretty well settled that the "dry system" of conservancy is the one best adapted to the requirements of a tropical climate. Ed. *M. Q. J.*

impurities carried into the river by the nullah would be swept past the cantonment and contaminate the stream. To the second plan I cannot see that any objection exists. The only difficulty is the digging the pits, but this the executive Engineer might be called upon to do, he himself selecting any site or sites convenient for his own purposes, and one being dug in the neighbourhood of the lines of each regiment. Combustion is so ready and efficient a way of destroying all refuse matter, that I would strongly advise the adoption of the latter system.

(d) Control over the purveyors of the common articles of Bazaar supply.—This is a subject bearing more intimately upon the health of one section of the military community than may at first sight appear. It is notorious that adulteration in the articles of milk and butter is largely practised. Fraud is doubtless committed in bread, flour, &c., but as bread of good quality and free from adulteration is issued to the troops by the Commissariat, and can be procured by every one, it is with the subject of milk that I would more especially deal, and in its relation to the *wives* and *children* of our European troops.

The mortality amongst children in India is, at all times and under all conditions of military life, high. The average for the three Presidencies may be stated to be 64·322 per 1,000 of strength annually. Varying from 39·8 per 1,000 at Madras, (the healthiest Presidency for children) to 84·2 per 1,000 in Bengal. The death ratio in England being 22·36 per 1,000.

Now at this station the death ratio amongst children has reached as high as 263·8 per 1,000, and has never been lower than 85·7.

It has been observed in India when soldiers' children are well lodged and cared for, that they thrive well till weaned, but that after that period their health deteriorates, and the cause unhesitatingly given by Medical officers is the difficulty of procuring suitable food for them. This applies with greater force to this station; not only are the articles of food suited to children, (especially milk and eggs) very dear, but the former is so uniformly adulterated that the soldier is cheated and his child deprived of its due nourishment.

I have repeatedly examined specimens of milk and the usual sp. gr. of that sold is 1.010. The specific gravity of pure unadulterated milk is from 1.030 to 1.035. No other

adulteration is, I believe, practised than that of diluting it with water. It is not to be wondered at then that children fed with milk thus impoverished and containing less than one half of its proper solid constituents should not thrive.

As a remedy I would propose that the Bazaar master be requested to give his particular attention to this point, that he be empowered to determine the number of bottles per rupee which the sellers of milk can be expected to give. That he be requested to direct the attention of the community generally to the point, and to encourage them to forward specimens of milk suspected to be adulterated for examination and report. That commanding officers of European Regiments be especially directed to encourage their married soldiers to bring to notice fraud of this nature, and further that the fraud, when detected and *proved*, be summarily met by a heavy fine. As before remarked, the rate of supply must be inquired into, for I believe that pure milk cannot be supplied at the present prevailing rates of seven or eight bottles per rupee. I would also recommend that no person be permitted to sell without a license.

(e) The necessity for encouraging the planting of trees.— The denudation to which the cantonment has been subject by the indiscriminate removal of trees, is a marked feature of the landscape. The amount of rain fall has, there is every reason to believe, also been influenced by it, and will become less and less as the clearing of the jungle is proceeded with.

During the rains, heavy showers are frequently to be seen falling upon the low hills and jungle but a few hundred yards distant from the cantonment, while none falls within its area. I have often observed the most promising indications of rain thus diverted, and taking into consideration that the rain fall at this station is at all times only moderate (average 46 inches), it is a question whether its diminution may not unfavourably affect the climate.

But in another point of view trees are much required. It is an admitted fact that belts of trees planted to windward of notoriously feverish localities, often render such sites salubrious. The foliage arrests and even absorbs the deleterious products known as miasma.

Intermittent fever has proved eminently destructive to the health and efficiency of the native troops. During the season of the year at which it prevails, the winds range between north and east. The planting of a double or triple

belt of trees (the quick growing acacias for instance) along the northern flank of the cantonment would, I conceive, constitute a sanitary measure of high importance. Screens of trees should also be planted to shelter all hospitals and barracks, exposed to the miasma rolling in from the jungles during the colder months of the year. The hospitals of the 15th and 44th Regiments are particularly exposed.

If practicable all the main lines of cantonment road should be planted with avenues of trees.

All existing trees, especially those in the neighbourhood of the European barracks, should be most scrupulously guarded. They afford a shady retreat to the men during the hotter period of the day, and offer an encouragement to their quitting the crowded and oppressive barrack rooms.

(f) Roads.—Much has already been done in this department by the Major of Brigade. The main roads are now all good; steps have also been taken to gravel the area upon which the barracks and hospitals of native regiments stand. This should be fully carried out—not only should the roads between the barracks be gravelled, but an area in front sufficiently large for the whole regiment to form up upon, in the wet season. I would also suggest that the ball practice ground which is low and swampy, be gravelled in three lines at the ordinary practising distances, so that the troops may stand dry footed.

Parading troops and keeping them standing on wet ground is a prolific source of sickness, and should be guarded against in every possible way. For the European lines all foot paths to privies, cooking rooms, bathing rooms, &c., should be gravelled. Good material is abundant, gravel of good binding quality being found in many localities.

The principal points connected with the general sanitary requirements of the station have been touched upon.

I may, however, be permitted to allude to some matters in which the Brigadier's authority is supreme, and which the experience of the last two years, has proved to bear intimately upon the health of the troops.

I allude (1) to the prevalence of *too early* parades during the cold and foggy season of the year; (2) to the existence of *morning* parades very frequently during the *rainy* season when the ground is saturated with wet; and I may add, (3) the too great frequency of parades and over-drilling of the troops.

There can be no question that *too early* parades in the

cold season are most productive of sickness. Attacks of fever are often clearly attributable to them. The natives especially suffer; but European officers subject to fever have satisfactorily attributed relapses to exposure to the early fogs of that season of the year. The attention of Commanding Officers was directed to this point, in Brigade Orders; but the Brigadier's *suggestion*, for it did not assume the form of an *order*, was not, I have reason to believe, in all cases acted upon. Inspection of regimental order books will determine this point.

I venture to advise an authoritative order that, during the cold and foggy months, no parades take place before 7 A. M.; and that no soldier leaves his barracks before the first bugle: but should heavy fog exist I would then advise *no parade at all.* In fact during the cold season the *morning* parades might, with great advantage to the health of the troops, be discontinued, and held in the evening instead. So also in regard to the *wet* season, no parades should take place upon wet ground. The rule at present in force is, I believe, that "no parade is sounded if rain falls after midnight." I would make the *condition of the ground* the only rule for guidance. If *wet* no parade should be held, and it must be remembered that the soil of all parade grounds of the native troops is a retentive clay, forming a stiff mud, and consequently long in drying.

I would also direct attention to the high importance of exploring the mountains to the westward in the neighbourhood of Mengdoon, for the purpose of selecting an eligible sanitarium for European troops.

The Arracan Hills, distant about 75 miles from this, and 25 miles from Mengdoon, are said to vary in height from 3,000 to 4,500 feet, and to afford plateaus of sufficient area for building. The Assistant Commissioner, Captain Hildebrand, has just returned from visiting one of these, situated about 25 miles from Mengdoon. At my suggestion he took with him an aneroid barometer, and thermometer for determining heights by the boiling point of water. The table land he visited has an approximate height of 3,700 feet. The thermometer stood at 80° during the hottest period of the day. The locality is reported to be easily accessible, to afford ample space for a small station, and to have a small spring of water. Other springs will probably be discovered, and one affording an ample supply is known to exist within two miles of the spot.

This plateau should be further explored, a competent person should be ordered to visit it next year, provided with proper instruments for determining its height and nature of climate, and drawing up a report on the subject of its eligibility as a sanitarium.

Provided it be tolerably easy of access (which it is reported to be) and a sufficiency of water be found, there can be no doubt of the success of the expedition. A party of sappers should accompany to clear the jungle, with an officer competent to determine the best and most practicable line of road.

A sanitarium in the neighbourhood, only 70 miles distant from the station, would be of incalculable advantage to the European sick; not only of Thyetmyo, but of the whole province of Pegu. Sick could be transferred from Tonghoo (except that an equally eligible sanitarium will probably be discovered in the neighbourhood of that station), Rangoon and Moulmein, while it would offer a charming retreat for such as may feel disposed to avail themselves of it, during the hot months of April and May.

The improvement of the Soldiers' morale and the profitable occupation of their minds and bodies in cantonment, is another subject of high importance to which attention may be advantageously directed. There is but little amusement and recreation for the European soldier at this station. Encouragement, as a very necessary sanitary measure, has not been given to out-of-door sports. It is a well established fact that those men who join in the sports of the field, as cricket, foot ball, racquets, &c., are the most healthy. With the exception, however, of a picked few to form a regimental eleven, even cricket, the favourite game, has not been much supported.

Commanding officers should be urged to encourage, not only the formation of regimental elevens, but every company should have its eleven. Every other sport tending to healthy exercise in the open air, at such periods of the season and day, when exposure will not be prejudicial, should be actively encouraged. I may here remark on the subject of exposure, that I much question the policy of compulsory confinement of the European soldier to barracks, during any portion of the day. The risk of injury by exposure, is, I believe, more than counterbalanced by the injurious effect of a heated and crowded barrack room. Men will not needlessly (as a rule) expose themselves, but

seek shelter. H. M. 29th Foot were under no restriction of the kind, except perhaps during the months of April and part of May, and might be seen playing at cricket and long bowls all day long, and they were remarkably healthy.

I would then advise every encouragement being given to field sports, without any restriction to hours, except during the really hot months of the year.

I am also of opinion that a *theatre* should be built for the use of the European troops. Government, I feel confident, would sanction the cost of such a building as *one* means of improving the health and morale of the European troops ; and I beg to suggest that the subject be referred, and a grant of money solicited, or that authority be obtained for the excutive Engineer to erect the building. Authority for the erection of racquet courts, might also be solicited, they might be built, as I am informed they are in Canada, of wood.

Lastly, I would direct attention to the encouragement of habits of temperance amongst the Europeans. Intemperance prevails to a great extent in the Artillery, and it is a remarkable fact that this branch of the service, has shewn a marked disinclination to get up any sports in the open air, it has never been found possible to get up an eleven for cricket, nor are the men to be seen amusing themselves in the open air. I would advise in regard to them, that the question of forbidding the issues of spirits at all in the canteen be considered. I would indeed interdict the sale of spirits in all canteens, and allow an additional quantity of beer or porter to be taken out instead, say, another pint, the present allowance per man of one quart of beer, and two drams of spirits, certainly tends to favour habits of intemperance, even an additional quart of beer would be far less injurious than the two drams of spirits.

As I am not writing a treatise on the subject of the preservation of the health of European troops in India, I will now conclude. My object is to direct the Brigadier's attention to some of the more obvious sanitary requirements of the station, and to fulfil a duty imposed on me by the late order on the subject of sanitary supervision.

Note.—As the duties devolving upon "Ex-officio sanitary officers," do not appear to be generally understood, or acted upon, we have published Mr. Ranking's report, and minute, for the guidance of those interested in sanitary improvements.—Ed. *M. Q. J.*

PART II.

REVIEWS AND NOTICES OF BOOKS.

1. *The Hyderabad Medical School. Its past History and present condition.* By GEORGE SMITH, M.D., Residency Surgeon and Superintendent, 1859.
2. *Hyderabad Medical Journal, Vol.* 2, *No.* 6, 1860.

AN institution strictly local in its operations and of a purely professional character, is likely to be so little known, that we avail ourselves gladly of this opportunity of alluding to the Medical School founded in connection with the Residency at Hyderabad. We have perused with great gratification the very valuable report upon this institution which was submitted by Dr. George Smith, of Her Majesty's Madras Medical Service, on the occasion of diplomas being presented to the successful pupils who were considered fit to receive the certificate of qualification, on the 16th of March 1859.

Dr. Smith in his address enters at first upon a general consideration of the position occupied by hukeems who, deriving their information partly from the experience of their predecessors, but chiefly from their own imagination and blind superstition, practice a hap-hazard and empirical treatment in the attempted cure of disease. Starting with but a small stock of knowledge they are little anxious to extend it, or utilize it to others, and hence it has happened that little advance is made in the knowledge with which they started in the first instance. It is not to be wondered at, if on the failure of their treatment whether it be of the simplest character, or the most heroic description, they turn in despair to the efficacy of charms, and the medicinal virtues of pounded rubies, or emeralds, as possessing properties, especially suited to their more aristocratic patients. Cost forms to their mind a true test of intrinsic worth, and bark, quinine, cod liver oil, sarsaparilla, jalap, and cream of tartar find favor in their eyes.

As might be expected, however, their principal studies are directed to the branches which include tonics and aphrodisiacs within them. They are in fact essentially physicians, and would seem from Dr. Smith's account to adopt an independence as to the subject of pecuniary remuneration, which

is more calculated to increase the number of their patients than the amount of the profits arising from their profession. This view of the nature of a physician's duties and the recompense which they deserve, appears to prevail in other circles of society than those afforded by the native community, and to the detriment of the interests and just rights of other physicians, than native "hukeems."

The native surgeons or hujjams combine, as did our professional ancestors, the duties of surgeon and barber. Dr. Smith's account of them is sufficiently characteristic, to induce us to reprint it in extenso.

"Of the other classes of Native practitioners, the hujjams or barber caste are the surgeons of India, they let blood and operate, sew up wounds, arrest hæmorrhage, and perform all the minor as well as, unfortunately, some of the major operations of surgery. They are persons of a low class. Their coolness and ignorance are astonishing, they rub recent fractures, cauterize dislocations and rheumatic joints indiscriminately, they cut into cerebriform tumours, and arrest bleeding by the application of boiling oil. They bandage at times to mortification, they use rude splints on the principle of Gooch's, and are deep in the mysteries of cauteries, marking nut, leaves, and liniments. As they are paid one anna for each suture, they generally contrive to put six where two would have sufficed, and it matters not where the wound is situated, whether on the leg or the scalp, the same industry and ingenuity in multiplying sutures, are equally displayed. I have seen a severe wound of the abdomen treated by inverting over the protruded folds of intestine the kernel of a half cocoanut, the whole mass being then carefully pushed into the abdomen, and the edges of the wound stitched over it.

"The herbalists are generally of the shepherd caste. They bring their stores from the jungle, and sell them to the druggists in the bazaars; they prescribe a little, and eke out their practice with incantations and charms.

"The druggists are chiefly Hindus; they generally keep a moonshee to read the hukeem's prescriptions.

"Their prices are at times exorbitant, they prepare neither infusions nor decoctions. They sell the raw drug, and the patient prepares it for use in his own house.

"The drugs in their stores are of uncertain action, being badly selected and carelessly kept, and serious accidents, in substituting one medicine for another, are not of uncommon occurrence.

"Oculists come occasionally from Hindustan. Although ignorant men, some of them are successful operators for cataract; they only attempt hard cataracts. Their instruments consist of a lancet and a blunt probe, with a few cauteries.

"Lithotomists rarely make their appearance; sometimes they are oculists as well, but generally they restrict themselves to the special operation for vesical calculus. The operation is a rude, but, in the inexcitable constitution of the Native, not always an unsuccessful one. The patient, I am told, is placed on his back on a cot, his head and shoulders resting on the lap of an assistant who holds him fast. The operator's fingers are then passed into the bowel, the stone searched for and hooked forward by the finger towards the perinæum, where an incision is made, and the calculus removed by a rude hook, in reality a seven inch nail, blunt and slightly rounded. The wound is kept clean, and if necessary slightly fomented; unsuccessful results are by no means so common as we might *a priori* have expected.

"Our account would be incomplete were we to omit a passing notice of fakeers and other religiosi, with their specific charms, holy sentences, astrology, &c. The female sex are very partial to these forms of medical practice, and as the paper on which the valued sentence is written, is at times dipped in croton oil, we can understand how one obvious effect at least can be secured, without having recourse to the supernatural for an explanation.

"The midwives are generally low women of the Telugu caste. Their ignorance is extreme, hence the proportion of deaths to recoveries from parturition in the city is something fearful to reflect upon. Suffice it to say, that whilst among us, one life in about 200 accouchements is lost, the mortality in Hyderabad may be safely rated at from 30 to 40 per cent. When the case is one requiring surgical interference, these midwives send for the wives of the barbers, who operate in the most ignorant and cruel manner with a sickle and hook. Both classes of women are professed procurers of abortion—a crime sufficiently common here, and regarded by many as by no means of an infamous character.

"Leech women constitute the last class we shall allude to. Leeches abound in this neighbourhood and are much used by the natives; women apply them, and as they receive two pice for each leech, the number applied will always bear more reference to the size of the affected part than to the strength of the patient, or severity of the disease. I have known as many as 250 leeches applied within three days, to the rheumatic ankle of a weak and anæmic man.

"The medical knowledge possessed by the best informed hukeems is more a knowledge of words and phrases than of the special features of disease. Nature is never studied; indeed the method they adopt of examining a case of disease, renders it impossible for them ever to arrive at any just conclusions regarding its nature. The patient approaches the learned man, stands—if he be a pauper—at a respectful distance, holds up his urinal, details hurriedly and exaggeratingly his more prominent symptoms, and receives a prescription, which would be regarded as valueless, did it not contain at least a score

of remedies, the combined action of which would puzzle the most learned therapeutist to unravel. In their opinion physic reached its acmé hundreds of years ago, and all we have to do now is to act upon the recorded wisdom of the past. They admit that improvements have taken place in surgery, and they candidly yield the palm of operative skill and boldness to the English Surgeon, but they do not admit his superiority in medicine, and in dietetics, they feel convinced that he has everything to learn."

Such is a graphic description of the contented ignorance and the woeful waste of human life it entailed, which it was hoped the establishment of the Hyderabad Medical School would in time dispel. That such a work must be gradual, if not painfully slow, those acquainted with the nature of the Oriental mind and Oriental prejudices will not fail to allow. However, nothing daunted by the obstacles to be overcome, Dr. Maclean, the founder of the school, steadfastly determined to do or die; braced his energies for the undertaking, and threw himself heart and soul into the good work. In spite of delicate health which at one time obliged him to retire to the Hills, he still pursued the even tenor of his way till success the most gratifying, came to crown his efforts. Some of his early difficulties are well described by Dr. Smith. "He was single handed, the scheme itself was a novelty, and the system of tuition by lectures and examinations was one utterly unknown to the natives here. The pupils had no acquaintance with the English language; there were moreover no text books, and there was little in the habits of the students calculated to encourage the teacher, or to facilitate the responsible work he had undertaken."

So commenced in September 1846, the Hyderabad Medical School, and it was not till 1853 or seven years afterwards that its success was decided. In that year "18 candidates for the certificate of qualification were examined by a Committee, the standard adopted was a high one; of the candidates 10 were passed as qualified and received the final certificate of the Institution." "In 1854, seven of the remaining eight candidates were found qualified." In this year Dr. Maclean having obtained his promotion to the rank of Surgeon, gave up the appointment of Residency Surgeon, and with it of course also the superintendence of the school. He had the honor of having introduced the science and art of European medicine into the populous Mahomedan capital of the Deccan. He had taught in their own

language 16 Mahomedan gentlemen to be good physicians and surgeons. He had given them the means of conferring incalculable benefit on thousands of their suffering countrymen and countrywomen. Six years have now elapsed since these young men obtained their qualification, and they are well reported of. Dr. Smith says, "their private conduct has been almost without exception unassailable, and their professional assiduity has been such as to merit approval and in one or two cases high commendation." Some of them are in large and lucrative practice in the city, skilled operators and accoucheurs.

Dr. Maclean was succeeded in the Residency by Dr. George Smith, the present able superintendent of the school.

The lectures were at first delivered in English and translated into Hindūstani by Mr. Sub-Assistant Surgeon Murray, who possesses remarkable fluency in that language. Dr. Smith applied himself in earnest to the task of mastering the Hindūstani and has for the past five years delivered his lectures in that language. We copy a short account of the system at present pursued.

"The school is open five days weekly. The students are divided into classes of which the senior is directly under the Superintendent, the second under Mr. Sub-Assistant Surgeon Murray, and the Junior under hukeem Meerza Ali Sahib, the native assistant teacher and former pupil of the school; at 8 A. M. daily the bell is rung and the attendance roll called. The senior and second classes then proceed to the dispensary where they receive Clinical and Pharmaceutical instruction. The sick are seen and prescribed for, operations are performed, and the best use is taken of the occasion, by commentaries upon the cases, to supply, as far as possible, the want, still existing, of a Clinical Hospital. The dispensary affords relief to from 200 to 300 patients monthly, besides having accommodation for 18 clinical cases, so that a very fair opportunity is afforded the students of becoming practically familiar with the principal diseases of the Deccan. Most of the minor, and, under certain restrictions, some of the major, operations are performed by them.

"Each class receives, in addition to dispensary practice, two hours' instruction daily, and in passing I may remark, that from experience it is found that two hours oral instruction daily, is as much as the pupils can take down in writing and master satisfactorily. The lectures and diagrams are all taken down at the time. Deducting the established holidays and the necessary suspension of work during the month of May, the students receive instruction each session three hours daily, five days a week during nine months of the year.

"The subjects of tuition are so arranged that generally only one and never more than two are taught to a class at one time. In this way alone can real and rapid progress be made.

"The interest evinced by the students is upon the whole very satisfactory; they catch at the meaning intended to be conveyed at once and they give the teacher the fullest encouragement to convey his ideas to them directly, in preference to communicating with them through an interpreter. Their conduct is uniformly correct in school, the position of a teacher in their estimation is a high one, and there is no want of polite and respectful attention on their part."

We believe this method of instruction to be decidedly the best for natives. They must have much time for digestion and assimilation, and if such be not allowed and indeed *insisted on*, they speedily adopt a habit of letting memory take the place of reason; whole passages of descriptive Anatomy or Surgery are committed to memory, closely packed and ready for verbal use; but a very slight cross-examination speedily shows them to be words only and not ideas—in fact to have no practical value whatever. "Dissection is strictly insisted upon in the case of every student. All the senior classes have dissected repeatedly, and have performed most of the surgical operations on the dead body."

In fact the object throughout has been to make thoroughly well grounded and self reliant practitioners—men accustomed to see and handle disease. Education of this kind must always be slow, but it is at the same time sure.

A Medical journal in Hindūstani, of which ten numbers constituting the 1st volume, have been issued, was started in 1855. A second volume has reached to the 6th number. "Copies of this journal are regularly sent to each hukeem and given to each student, whilst 50 copies of each issue are forwarded to the Governments of Calcutta, Madras and Agra, and 25 to the Government of Bombay." The issue numbers 300 copies, of which the expense of 100 copies is borne by the Minister who also grants the use of his lithographic press, and that of the remaining 200 copies is defrayed by the subscriptions of the respective Governments above named.

The journal is lithographed in the Shikustch type on foolscap paper, quarter sheet size, and is entirely in the Hindūstani character except the title on the cover which is in English. The 6th No. of vol. 2, which we have now

looked into, contains an article on the pulse, one on measles, some orders regarding leave of absence to the members of the Nizam's medical service, and extracts from some of the Quarterly Medical Journals of England.

It commences like all orthodox Mahomedan writings with the usual "Bismillah ul Rahman ul Raheem." In the name of God, the merciful, the compassionate.

The first article is a treatise on the pulse, by "Meer Baker Ally" tubeeb, which means of course former pupil of this school. It treats of the cause of the pulse, the ordinary and best situations for examining it, the different characters of the pulse, such as quick, slow, hard, incompressible, weak, strong, wiry, undulating.

It should be mentioned that most of these characteristic English words are written in the Hindūstani character. Thus *thrilling, wiry, tremulous, undulating, jerking,* and they certainly have a strange look in their oriental garb. They are, however, always indicated by a line above the word and the explanation is given after them. In regard to the pulse due notice is taken of its varieties as influenced by age, sex, constitution, period of digestion, height above the sea, attitude, and peculiarities in the distribution of the arteries. In fact this is a fair digest of the whole subject.

The next article is a treatise on measles, by hukeem "Syed Ally," and occupies 50 pages of the journal. It begins by stating that this disease is called in Latin *rubeola* or *morbilli* and in English *measles,* and in Arabic "*hasbat*" and that it is one of the "*exanthemata.*" The writer proceeds to describe the peculiar character of measles as distinguished from small-pox and *scarlatina*—he mentions the five varieties, *Rubeola vulgaris, sine catarrho, inflammatory, congestive* and *typhoid.* He also speaks of the *epidemic* and *contagious* form, *period of incubation,* Dr. Home and *inoculation,* &c. All the words we have marked in italics being English written in Hindūstani character, and of course only intelligible to those natives who have been educated in the meaning of English medical terms. The *period of invasion, period of eruption, period of desquamation,* sequelæ as *albuminuria, pneumonia,* are mentioned in due course. Indeed this appears to be a very full account of the disease in all its bearings.

The last part of the journal consists of extracts from periodicals and the description of such remedies as have been found of especial practical value in various diseases.

The whole is written in plain and simple Hindūstani with a good many Deccanee words, and such Arabic and Persian terms as are used in medicine. There is no attempt at elegance of diction and as a vernacular work it is disfigured by the copious introduction of English words; but it is no doubt perfectly intelligible to the members of the Hyderabad native medical service, for whose special use it is designed, and to whose diligence and scientific knowledge the articles contained in it are highly creditable.

Our readers will agree with us that this school reflects great credit on all who have been connected with it. Its success is established. Being founded on sound common sense it has been built up by zeal, judgment and perseverance. It has brought the power of European knowledge to the immediate cognizance of the motley population of a large eastern city. It has shown them tangible results—some seed at least of hopeful progress has been sown and borne fruit; medicine here, as throughout the civilized world, has declared her philanthropic mission and been honoured in her missionaries, and as Colonel Davidson remarked in a part of his address on the 16th March 1859, "His appreciation of the success of the Hyderabad Medical School was fully acquiesced in by the Supreme Government who have been pleased to regard this Medical school as one of the successful educational facts of India."

An Introduction to Practical Pharmacy, designed as a Text-book for the Student, and as a guide for the Physician and Pharmaceutist. With many formulas and prescriptions. By Edward Parrish, Graduate in Pharmacy, &c., &c. Second Edition, greatly enlarged and improved. Philadelphia: Blanchard and Lea, 1859.

If the physician calmly considers what has tended most to arrest the progress of Medicine as a science, he is compelled to acknowledge that an incomplete Materia Medica,—an insufficient knowledge of the remedial powers and actions of drugs,—has been the principal impeding circumstance. The relative importance of the several symptoms which proclaim the existence of disease may be so perfectly appreciated that an accurate diagnosis may be readily formed; the exact pathological condition may be thoroughly known and understood; the inevitable tendency of the unchecked disease

may be certainly prognosticated; and still the physician may be at his wit's ends to ascertain how—safely, surely and speedily—to conduct his patient to a state of health; so that he shall not only be relieved of the abnormal condition in which he was placed, but that the affected organ shall be restored uninjured by the disease, whilst the general constitution shall be free from any deleterious effects of the remedy.

The uncertainty attending the reputed actions of the substances composing the Materia Medica, has given rise to the various methods of treatment of certain diseases which we find recommended in different standard works, and has further served as the mainspring of many of the quackeries which are so rife at the present day—Homœopathy and Hydropathy, for instance. Some people would even go so far as to say that had it not been for a want of accurate knowledge of the remedial powers of medicinal substances, such a book as Sir John Forbes's on "Nature and Art in the cure of disease," would never have appeared.

To illustrate this uncertainty; one practitioner will expect to derive hypnotic effects from the exhibition of thirty or forty minims of tincture of hyoscyamus; whilst another would not think of prescribing less than half an ounce for the same purpose. One confidently gives a sleepless patient six or eight grains of extract of hop; whilst another would scarcely dream of this medicine as a narcotic. One will give scruple doses of calomel and talk of its *sedative* action; whilst others would never employ the drug in larger doses than one-fourth of the quantity named, and would as soon expect a sedative action to follow its exhibition as that a dose of digitalis would excite and increase the force of the heart's action. Take a single disease—tetanus for example—one trusts to opium, another to nicotine, a third to Indian hemp, a fourth to chloroform and belladonna, and a fifth to tincture of aconite, and each is able to give strong arguments, and illustrative cases, in favor of his own treatment and opposed to that of all the others.

We believe that every candid physician will support us in the assertion that our real, practical knowledge of Materia Medica, has not kept pace with the immense strides which have recently been made in Chemistry, Physiology and Pathology; and would, therefore, with us, welcome most heartily any earnest worker in a field which has, as yet, been so insufficiently explored. We do not, for one moment,

deny the value of our standard works on Therapeutics. We entertain a high opinion of the labors of Pareira, Royle, Redwood, Ballard and Garrod, Nelligan, Headlam, Waring and numerous other authors; but at the same time, we must acknowledge that the practitioner does not derive all that benefit from the administration of drugs which his earlier inquiries, as a student of Materia Medica, led him confidently to expect.

If we carefully examine into the improvements which have recently been made in this branch of our art, we shall find that they are chiefly of a chemical and pharmaceutical character. A more accurate knowledge of the composition of medicinal substances has been obtained, and hence has resulted the extraction of many of the active principles of these substances; whilst the operations of pharmacy have been so improved by the introduction of new and superior methods of preparation that we have little left us to desire in this respect. What we do particularly need is a more extended acquaintance with the real physiological action of drugs upon an individual in a state of health, and with their remedial effects upon one in a state of disease. It would appear, at first sight, that these are matters of positive demonstration, but the enquirer finds so many disturbing circumstances that he is forced to own that his knowledge is not of that accurate character which is so much to be desired.

We remember a late London Hospital Surgeon telling us that calomel, antimony, quinine, iron, aconite, opium, and a few escharotics, discutients, emollients, aperients and astringents, were all that could possibly be required by him in the treatment of surgical diseases. This may have been quite true, but had he entered upon the domain of general medical practice, we imagine he would, like us, have found a more extended armamentarium necessary; and when he descended to a particular choice he would have found a perfect *embarras de richesse*—so many preparations, that he knew not which to choose and had no means of determining which was the most efficacious.

We are not advocating the curtailment of the articles composing our Materia Medica, neither would we wish to limit the introduction of newly discovered medicinal substances; we have no fear of either of these occurrences so long as Sir Tumley Smiffens exist to pride themselves upon being the first to administer, and Mrs. Wititterleys live to glory in being the first to take, "the new medicine;" but

we do earnestly hope that some of those whose propensities guide them in this direction, will direct their energies to the discovery of some method of placing the true remedial effects of drugs on a more certain and secure basis than obtains at this present moment.

The work before us is a scientific introduction to Pharmacy; one of those books which we have alluded to above as contributing to a more advanced knowledge of the chemical composition, sensible properties, and best mode of preparation of medicinal substances. It is specially intended for students, and although the author has not neglected the more purely scientific departments of his subject, yet, as he tells us in his preface, he has "steadily kept in view the elementary character of the work" The said work is an octavo of professedly 720 pages, but as the author (for what reason we know not) commences with page 33, we must reduce this number to 688. The volume is most respectably "got up," the type is remarkably clear and good, and, as a small fount is plentifully used, each page contains a great amount of matter. The preface informs us that "the volume is not the work of a secluded student in his closet, it has been composed by a practical pharmaceutist and druggist, in the midst of the daily routine of the shop, and surrounded by the difficulties incident to an active business career," and as such it does very great credit to its author.

The title page announces that the work is embellished with two-hundred and forty-six illustrations. It is true that there are on the pages of the book figures numbered from 1 to 246, but very many of them are repetitions of previous figures. For instance, figs. 19, 166 and 218 are the same; figs. 167, 168 and 169 are repetitions of figs. 20, 21 and 22; 80 and 81 of 37 and 38; 79 of 40; 86 of 39; 84 of 41; 239 and 240 of 45 and 46 respectively; and there are several other examples of this multiplication of numbered figures without the representation of any new object. Now we think this practice highly reprehensible, and it is in consequence of our having observed it to be common in some recent works, to which attention is prominently attracted on account of the number of the illustrations, that we have thus pointedly alluded to it. Mr. Parrish's book has sufficient intrinsic merit to have rendered it unworthy of him, or his publishers, to have resorted to this paltry subterfuge. A reference to a previous figure, such as

(see. fig. — page —), would have occupied much less space than the reproduced woodcut, and would not, to the slightest degree, have inconvenienced the reader.

Of course we do not pretend to have read Mr. Parrish's book through; we should as soon think of perusing the whole of letter C of Johnson's Dictionary. We have taken a general glance at the contents and their arrangement, and then selected two or three special chapters which we have carefully examined.

The work is divided into five parts. The first part is preliminary and treats of "The furniture and implements necessary to the dispensing office or shop; of weights and measures and of specific gravity; and of the United States Pharmacopœia."

The second part is headed "Galenical Pharmacy"—a term which we humbly think should be completely discarded from a work of this kind—and includes the collection of plants; general pharmaceutical operations; and the preparation of infusions, tinctures, extracts, &c. &c. The fifth chapter of this part is devoted to the consideration and explanation of "Percolation or the Displacement process," the advantages of which in the preparation of tinctures and cold infusions are fully shown, and it is mentioned that it has been, to a considerable extent, sanctioned by the Committee which revised the United States Pharmacopœia in 1840. We believe this displacement process is generally resorted to by English manufacturing Druggists, although it has not as yet received official sanction. The rapidity of preparation, and the perfect exhaustion of the active principles of the materials employed, which percolation affords, appear to us strong recommendations for its general employment, and for its official recognition in our Pharmacopœia.

The third part is "On Pharmacy in its relations to Organic Chemistry." This is an important division of the book. It contains nine chapters, the headings of which are as follows; 1st, Lignin and its derivatives; 2nd, On Farinaceous, Mucilaginous and Saccharine principles; 3rd, On Albuminous and similar principles, and certain animal products; 4th, Fermentation, Alcohol and the Ethers; 5th, Fixed Oils and Fats; 6th, On Volatile Oils, Camphors and Resins; 7th, On Organic Acids; 8th, On the Alkaloids; and 9th, On Neutral Organic principles mostly peculiar to a limited number of plants, and possessed of medicinal properties. It is this part of the work which we have especi-

ally examined, more particularly chapters III and VIII. The subjects are very fully treated, and in a chemical and pharmaceutical point of view pretty well exhausted.

The fourth part treats of "Inorganic Pharmaceutical preparations," and the fifth is entitled "Extemporaneous Pharmacy." Lest the reader should be unable to derive any definite idea from this term, we give the headings of the chapters in this part. 1st, On Prescriptions; 2nd, On the writing of Prescriptions; 3rd, On the Art of selecting and combining medicines; 4th, On Powders and Pills; 5th, Liquid preparations, solutions, mixtures, &c.; 6th, External applications; and 7th, On the Art of dispensing medicines.

There are some very sensible remarks in these chapters; we append a few paragraphs.

"A full and recent treatise on Materia Medica should always be within reach of the physician, and one or more of the best medical journals should replenish his library with the most recent discoveries and improvements; no where can a professional man less afford to economize than in his books.

"In this age of active enquiry and unceasing investigation, a very few years suffice to produce important changes, both in the theory and practice of medicine; and the physician who stands still while progress is all around him, can expect no better fate than that of the mechanic, the farmer, or the man of business, who is content with the appliances of the past age in endeavoring to compete with those possessed of the facilities of the present.

"While a sound conservatism, a becoming deference to those who have gone before us, and to the great medical authorities in our own time, should prevent a hasty departure from established principles or mode of treatment, there is a wide and profitable range for experiment in the vast extent and variety of the Materia Medica, and the combinations of which individual remedies are susceptible."

And again we read under the head of *Incompatibles*:—

"Authors have given too absolute a sense to the term incompatible, by giving sanction to the idea that all substances which form insoluble precipitates are incompatible with each other. An insoluble compound is not necessarily inert, but, as experience abundantly proves, is frequently the best and most eligible form for a medicine.

"The reactions which occur in the organism are not to be judged of by ordinary chemical laws, as manifested in the laboratory of the chemist. The difference of action between the animal solvents under the influence of the life force, and those employed by the chemist with mechanical means at his command, are too well known and appreciated to require extended notice. Living beings can dissolve, appropriate, and circulate in their fluids, substances which, to ordinary agencies, are most intractable and insoluble."

These extracts will afford the reader a specimen of the style in which the work is written.

We find some passages which excite a smile; take the following under the head of writing of Prescriptions."

"When the patient is in moderate circumstances, the physician indicates that fact to the apothecary by the letter P, in one of the lower corners of the paper. If very poor, P. P. is written; from a conscientious apothecary, either of these marks secures a reasonable reduction in the price charged, and its omission by the physician leads to suspicions that the patient is not deserving of charity."

We wonder whether our transatlantic brethren carry this practice further, and when the patient is in good circumstances put R at the foot of the prescription, and R. R. if very rich, so that the apothecary may have an opportunity of recovering his reduced profits on the medicines supplied to the P. and P. P. patients.

There is an appendix to the book which contains "Hints on the management of a sick chamber," which hints, we are told, are "chiefly from the pen of a lady of intelligence and experience." They are laconic and, as far as they go, very good, but not quite up to those of our own Miss Nightingale. Directions for the preparations of "Articles of diet for the sick and convalescent," are appended, and they appear to be of a useful character.

We have already expressed our opinion that this book is a very good guide to the pharmaceutist. One feature of the work is the very concise way in which all officinal preparations, their composition, doses, and principal uses, are arranged in tabular forms, called by the author, syllabi. This affords abundant space for the consideration of unofficinal preparations, many hundreds of which are noticed.

The work has a certain commercial character, for the prices of many of the implements described and recommended are mentioned, and not only the prices but the names of the manufacturers and vendors are frequently given. And in the appendix we have three scales of "Physician's Outfits;" thus there is the "Seventy-five dollar outfit," the "Fifty dollar outfit," and the "Twenty-five dollar outfit;" and full directions are given how to employ the various articles, contained in each *outfit*, to the best advantage. We find, further, under the heading "Rules of a Pharmaceutical Store," some amusing regulations as to the specific duties of the Senior, First Junior and Second Junior apprentices. Those of the latter individual appear to be, among our American

brethren, such as would not for a moment be tolerated by any English druggists' apprentice, for they are altogether of a menial nature.

In conclusion we can confidently recommend Mr. Parrish's book to any one who is desirous of being fully acquainted with the present state of Pharmacy.

1.—*Report on Vaccination in the Madras Presidency for* 1858.—(Selected from the Records of the Madras Government)—Fort St. George: H. SMITH, Superintendent Government Press.

2.—*Exposition of a Method of Preserving Vaccine Lymph Fluid and Active, with Hints for the more efficient Performance of Public Vaccination.* By WILLIAM HUSBAND, M.D. London: John Churchill.

THE official Report on Vaccination before us cannot be regarded as a satisfactory one, and in reviewing the pamphlet generally, it will be best to glance at each successive paragraph of the Principal Inspector General's letter, to the Chief Secretary to Government.

After the usual formal exordium in the *first* paragraph, Dr. Pearse announces in the *second* "a slight decrease in the number of operations performed during the year 1858."

In the *third*, he mentions their relative *increase* and *decrease* in the different zillahs of this Presidency, and briefly alludes to the alleged causes of the latter in a few of the districts. Of these causes, the one that most commends itself to our notice is that at Trichinopoly, where "the decrease is satisfactorily accounted for by the local superintendent, who states that stricter supervision was exercised by the Collector, and the returns are in consequence more trustworthy."

In the *fourth*, the average number vaccinated by each operator is given as 1,104, which is represented as nearly 1,000 less than the number laid down by the late Medical Board as the proper quota of operations by each vaccinator.

In the *fifth* section, the removal of the circuit superintendents owing to the exigencies of the service is lamented, and a hope expressed that they may soon be permitted to rejoin their appointments.

The *sixth* and succeeding three paragraphs refer to the

continued unpopularity of vaccination, the causes of this unpopularity, and the large mortality from small-pox in Southern India. And all these circumstances form the basis of a practical recommendation that vaccination should be made compulsory in our Eastern Empire, by a legislative enactment similar to that which has been found necessary so enlightened a country as England.

The *tenth* section tells of useful results which have attended inspections by Zillah Surgeons of the work of vaccinators in their several taluqs, even although such inspections must, of necessity, be very hurried and imperfect.

In the *eleventh*, the circulation of vernacular translations of Dr. Maclean's short treatise on Vaccination and Small-pox is announced, but no good results from the procedure are recorded.

The demand of a certificate of vaccination from all persons admitted into the Uncovenanted Civil Service, &c., unless they bear the marks of small-pox, is recommended in the *twelfth* paragraph, as a means of prominently setting before the people the importance which Government set on the prophylactic.

In the *thirteenth* section, the vaccinators are described as "men of no education; many of them are idle, careless, or addicted to falsifying their returns when away from supervision, and they are, as a class, by no means fit to be entrusted with the important duties for which they are employed." Dr. Pearse then records a most judicious suggestion "that our vaccinators should receive some general medical instruction, before they are allowed to practice as such," and this induces us to allude to the admirable proposal, put forth a few months ago, to unite the Vaccine with the Subordinate Medical establishment—an amalgamation which, we hope, will be ultimately carried out. To our view it affords the best guarantee that the important department of vaccination will be more satisfactorily worked than it has ever yet been; and under the new arrangement, we shall not only have an efficient class of circuit superintendents, but also a better staff of vaccinators—men who have received a medical education, and will consequently not only be better qualified to discharge the duties of vaccinators, but also able to do some good as medical practitioners in their itinerancies.

Paragraph *fourteen* urges that local superintendents should be re-invested with the power "entrusted to them by the Regulations of 1847," and that the immediate control

of the Vaccine Department should be vested in the Principal Inspector General of the Medical Department.

The decrease in the number of vaccinations by Medical subordinates, the expenditure of the Vaccine Department, and an increase in the number of *infants* vaccinated, are the subjects of the *fifteenth, sixteenth,* and *seventeenth* sections: and in the last paragraph, allusion is made to "some interesting observations on Vaccination, and the great prevalence of Small-pox in the Northern Division," by Assistant Surgeon Donaldson.

Such is a short synopsis of Dr. Pearse's report, which commends itself to our notice, not only as an honest and candid exposition of the defects and short-comings of a very important public department, but also as suggesting sensible and judicious means, calculated to remedy the evils complained of. We must suppose that the failure of Government to adopt some of the most important suggestions of the Principal Inspector General is the result of necessity and not choice. Their order on his Report is certainly a very barren document, and things must, for the present, go on much as they have been doing. Possibly, when the State coffers are replenished,—a contingency that at present appears indefinitely remote,—we may hope for improvement, but till then we can expect none. 'Complete stagnation' is the phrase that best expresses the actual condition of an establishment in which amelioration and advancement are serious *desiderata.*

We have been struck, in reading the extracts from reports of local superintendents, by their almost universal testimony to the excellence of the vaccine lymph employed. At the same time it is worthy of remark that the proportion of unsuccessful to successful cases is unquestionably very large, and we cannot help connecting the failures in many of the cases with deterioration of the virus. Be this, however, as it may, there can be no doubt that in Burmah and other parts of the Indian Empire, the preservation of lymph fresh and active for any length of time, has been hitherto found not only difficult but absolutely impossible; and consequently, such a work as Dr. Husband's "Exposition of a Method of preserving Vaccine Lymph, &c.," is to us in this country a valuable acquisition. We strongly recommend its careful perusal to all our professional brethren, both with a view to their acquainting themselves with the best means yet devised for each and every medical practitioner's securing for

himself a permanent as well as ample supply of virus; and also that they may learn how an earnest man, labouring even in a well-worked field, may strike upon some discovery, which, however small in its apparent dimensions, may, nevertheless, result in the greatest benefit to his fellow-labourers in the same field and to the world at large. The diction of Dr. Husband's *brochure* is simple, clear, and attractive, rendering its persual exceedingly easy and pleasant.

After alluding to the difficulty of preserving vaccine lymph, and giving a short history of the origin of his method, the author deprecates the confounding of his with two other tube-methods to which he refers. The first, was one invented by M. Bretonneau of Tours, in which the tubes, fusiform in shape and less than an inch in length, were found so inconvenient in practice that M. Bousquet, "the highest authority on the subject," abandoned them in favour of the old squares of glass. The second form of tube had a terminal bulb, but the objections to its use were so many and so great, that, even though it served the important purpose of preserving the lymph fluid, it was rejected. The third and last form is the author's own, and he thus describes it :—

"It is, as I said, a simple straight tube, cylindrical, open at both ends, and of such dimensions as to fulfil the following conditions, upon which its peculiar value as a means of preserving lymph for future every-day-use essentially depends. It must be—

1. In the first place, of such tenuity that it can be sealed instantaneously at the flame of a candle.

2. In the second place, it must be large enough to contain as much lymph as is sufficient for one vaccination.

3. In the third place, long enough to admit of both ends being sealed hermetically, without subjecting the charge to the heat of the flame.

4. And, in the fourth place, strong enough not to break easily in the mere handling."

The mean measurements of the tubes he uses are the following :—

Average length.....$2\frac{3}{4}$ to 3 inches.
Diameter..... $\frac{1}{28}$th of an inch.
Thickness of wall..... $\frac{1}{200}$th of an inch.

After having fully and plainly described the capillary tubes, Dr. Husband details the manner of using them.

"The vesicles having been opened with a lancet in the usual way, the tube, held in a position more or less inclined to the horizontal, is charged by applying one end of it (the straight end, if they be not both straight, not that which tapers to a point) to the exuding

lymph, which enters immediately by the force of capillary attraction. As much lymph is allowed to enter as will occupy from about one seventh to one-half the length of the tube according as its capacity is greater or less. As a general rule, each tube should not be charged with more than will suffice for one vaccination."

It is now to be sealed in one or other of the following ways :—

"Either, *first.* Make the lymph gravitate towards the middle, by holding the tube vertically, and, if necessary, giving it a few slight shocks, by striking the wrist on the arm or table. Then seal the end by which the lymph entered, by applying it to the surface of the flame of a candle. It melts over, and is sealed immediately. Proceed with the other end in the same way, but first plunge it suddenly, say, half an inch, into the flame, and as quickly withdraw it, till it touches the surface as before, and hold it there till it too melts over. If it be applied to the surface of the flame without being first plunged into it, it melts no doubt, and gets sealed ; but before you have time to complete the process, and while the glass is still soft, the heated air within the tube expands, and forms a minute bulb, which, from its tenuity, either gives way on the instant, rendering it necessary for you to break off the end and begin anew ; or, what is worse, remains entire for the time, only to break afterwards by the slightest touch. Mr. Ceely has suggested that this precaution of plunging it into the flame before sealing it, besides being necessary for the reason stated, is also useful in expelling a portion of the air, and so leaving less air to be sealed up, along with the fluid lymph. Or else, *secondly*, the charge having entered, hold the tube with the finger and thumb, covering the inner extremity of the column of lymph, and protecting it from the heat, and draw nearly the whole of the empty portion through the flame, so as to rarefy the contained air, and in withdrawing it, seal the further extremity. The column now passes quickly along towards the middle of the tube, as the contained air cools, and you then, with the precaution already explained, seal the orifice by which it entered.

"It should be observed, that in no case is a tube to be laid down until the lymph has been made to pass towards the middle of it, for the fluid concretes quickly about the orifice, and you cannot afterwards detach it, without breaking off the end, and the concrete portion of lymph with it. But if it be at once made to pass away from the orifice, by holding the tube vertically, you may lay the charge down, and take half a dozen or more in the same way before sealing them ; only, if you delay the sealing process too long, more than five minutes perhaps (a delay which need never happen), the lymph within the tube is apt, from evaporation, to become adherent, especially if it be more than ordinarily viscid, or if the calibre of the tube be unusually small, and it cannot afterwards be blown out, when you come to use it.

"Before concluding these directions, let me observe farther, that if the lymph do not exude freely, the tube may require to be drawn several times more or less obliquely across the surface of the vesicle, or cluster of vesicles, until a sufficient charge has entered; but generally if the exudation be copious, and a drop of some size have formed before you begin to take your supply, the orifice of the tube need not, indeed ought not, to touch the surface, but is merely to be dipped into the clear fluid; and one may commonly, in this manner, from one infant's arm, charge five or six tubes in almost as many seconds, with perfectly pure and limpid lymph, which shall contain neither epithelial scales, nor pus globules, nor blood discs, and is therefore, so far, in the best possible condition for preservation.

"In order to obtain the lymph from a tube for the purpose of vaccinating, the sealed ends are broken off, and the fluid contents blown out gently on the point of the lancet or vaccinator."

We make no apology for this long extract, as our object is to give our readers "an adequate idea of the facility and expedition with which these manipulations" may be performed, and no description of a reviewer can attain this end so well as the *ipsissima verba* of the author. Another advantage of these tubes is the ease and safety with which they may be sent even by post to remote distances.

"A flat piece of soft fir, about three inches and a half long, an inch and a half wide, and one-sixth of an inch thick, has a narrow and shallow groove made in it about a quarter of an inch wide, into which the charged tubes, two or more of them, are placed, with perhaps a few filaments of cotton beside them to prevent motion. Another piece of wood of the same size, but which need not be quite so thick, is then laid above the groove and its contents, and the two pieces are fastened together in any way that is thought most convenient, by being tied or pinned together. Such a package resists the post office stamp perfectly. To correspondents in the country, I generally send two or three charges; to India or other distant parts, seldom fewer than eight or ten. These ought to consist of lymph from several different sources, in order to afford several chances of success, in case some of them should prove inert."

But not only for the conveyance of lymph to distant parts are these capillary tubes well adapted—they are equally well suited for daily use. They may be carried in the waistcoat pocket in a glass tube, whose wall is rather thicker than a test-tube, and secured by a common cork at its mouth; or they may be still better put up "in a small box nearly four inches long, two broad, and three-fourths of an inch deep."

One of the highest recommendations of this method is

that the efficacy of the virus is retained for an indefinite length of time. "That lymph so preserved possesses a *permanent value*—in other words, that it retains its virtue unimpaired for months and years, is now well ascertained. It is a fact admitted on all hands by the members of the Medical profession in Edinburgh, and one to the truth of which many of their number are ready to testify from their own observation." Dr. Husband cites cases in which perfect vesicles had been obtained from the employment of lymph varying from seven years and three months to eleven months old. The failures also have not been observed to increase in number with the increase of the age of the virus; but on the contrary, so far as the author's experience has gone, the chance of success appeared to augment with the age of the lymph—an observation which appears to prove too much, and has been satisfactorily explained in the treatise. The proportion of failures with virus below the age of two years is reckoned as one in ten, but, says our author, "on looking back, however, I consider it probable that, with greater care in the selection of the lymph at first, and by taking it oftener at the expiration of the sixth day than of the seventh, my success would have been greater." We think this remark worthy of special notice. The employment of lymph while it still deserves the name, and before it has advanced into the condition of a puriform fluid—in other words, to take the contents of a *vesicle* and not a *pustule*,—we believe is a rule too frequently infringed, and hence failures occur much oftener than they would other-wise do.

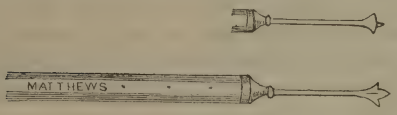
A few words regarding the fittest instrument for performing the operation. Dr. Husband very justly exhibits a preference for Dr. Weir's vaccinator, which must be familiar to us all, with this modification, however, that the lancet at one end should be made of ivory or silver instead of steel; and he uses a common lancet to open the vesicles. But in the *Medical Times* and *Gazette* of the 3rd November last, we observe a communication from Mr. Samuel Spratly, a member of the National Vaccine Establishment, recommending an instrument which appears to us ingenious and likely to be more efficient than any others. We shall let the inventor speak for himself regarding his invention, but regret that he has omitted to specify how many failures he counted among the 800 children whom he had vaccinated with the instrument in question. He writes :—

"The operation of vaccination, though one of exceeding simplicity

has frequently failed, not so much from the imperfection of the material employed, as from a want of attention on the part of the practitioner to the simplest points calculated to ensure its success.

"The most important of these, and one least attended to, is making the incision too deep, and causing thereby considerable flow of blood, which prevents the inserted virus from being absorbed, and produces a good deal of pain to the little patient. It occurred to me that these inconveniences might be avoided by an instrument so formed that the incision in the arm could be reduced to a minimum, and little more than a minute drop of blood follow its withdrawal from the wound.

"The instrument which is figured in the annexed drawing consists



of a small lancet-point of a triangular form, of about the twentieth of an inch in length, the upper surface being formed by the base of the triangle, and the under by the two sides and apex : the upper surface is carefully hollowed out both to the edge and point, this serves for the reception of a moderate quantity of lymph. On the under surface is a small guard, which projects from each of the two sides of the triangle which form the under surface : this prevents the point entering the skin beyond a certain distance. It is mounted on a small steel stem, and inserted in an ivory handle, or may be made to fold up like an ordinary lancet, according to wish. When about to be used the excavated upper surface is filled with lymph, either from a fresh vesicle or from some preserved in Dr. Husband's admirable capillary-tubes, and inserted diagonally beneath the skin ; this forms a little valvular wound into which a minute drop of matter flows, and no more blood follows the operation than would be caused by puncturing the skin with a fine needle. I have now used this instrument for more than five months, during which time I have vaccinated nearly 800 children, in each case by the directions of the National Vaccine Board. Four punctures are made in one arm of the child, and to vaccinate four children I have never found it necessary to charge the lancet more than once. To practitioners who, like myself, vaccinate large numbers in the shortest possible time, this little instrument will be a great boon, as well as a great saving in lymph."

A Practical Treatise on the Diseases of the Lungs: including the principles of Physical diagnosis. By WALTER HAYLE WALSHE, M.D., &c. &c. Third Edition, revised, and much enlarged. London: WALTON & MABERLY, 1860.

IT affords us much gratification to announce the publication of a new edition of Dr. Walshe's standard work, on Diseases of the Lungs. According to the author, the new edition has been carefully revised, enlarged, and in the main, re-written. Some points which in previous editions, were omitted or but briefly touched upon, have been included or further elucidated, in the volume before us.

"The theory of various acoustic phenomena has been examined afresh, and an attempt made to establish the practice of percussion on a new and, as it is hoped, truer and more clinically useful system than that hitherto adopted.

"Descriptions of several diseases, previously omitted, are now introduced; the causes and mode of production of the more important affections, so far as they possess directly practical significance, are succinctly enquired into; an effort has been made to bring the description of anatomical characters to the level of the wants of the student as well as of the practical physician; and the diagnosis and prognosis of each complaint are more completely considered. The sections on treatment, and an appendix (concerning the influence of climate on pulmonary disorders,) have especially been largely extended."

The work is divided into two parts, the first of which treats of the methods of physical diagnosis, including Inspection, Application of the hand.—Mensuration, in rest and movement—Percussion in health and disease, and Auscultation. The second part treats of diseases of the lungs and appendages. The work is arranged in sections, but unlike most medical books with which we are acquainted, it is paragraphed throughout, after the manner of a bulky official document. We observe that it contains altogether 1,834 paragraphs, and the whole makes a goodly volume of 600 pages.

We have lately discussed the subject of Percussion in health and disease at some length, as applicable not only to pectoral affections but diseases of the abdominal viscera, and we do not intend to dwell upon it, in the present instance; suffice it to say, that this section of the book is very carefully written, and redounds to the credit of the author.

Nor have we time to enter upon a review of the most elaborate section of the book—that on Auscultation. Dr. Walshe has long been known to the profession as a pains-taking and skilled auscultator. Those who have had the oppor-

tunity of witnessing his practice in University College Hospital or the Hospital for Consumption, Brompton, cannot have failed to recognise his masterly powers of diagnosis, in obscure or complicated chest disorders, and to desire that a modest share of the special faculty which he so pre-eminently possesses, in process of time, may be acquired by themselves. Dr. Walshe does not think it of much consequence whether pulmonary auscultation is performed with the naked ear applied to the chest wall, or through the medium of the stethoscope. In certain situations the former is inadmissible, and therefore he recommends the student to cultivate the art of recognising sounds through the latter. With regard to this instrument, he is not very particular whether it be made of wood or ivory, or a mixture of the two, or whether it be hollow or solid. The great desideratum is a well fitting ear-piece, and as all ears are not of the same size or shape, it becomes as necessary to try on a new stethoscope as a new hat, previous to purchasing it.

Having suited himself with a well fitting instrument, the utility of it, as a means of diagnosis, rests with the user himself, and does not depend upon the "density or quality of the material, or the direction of its fibres." In certain regions of the body, or with patients so ill that they cannot remain in the required posture, a flexible stethoscope may be advantageously used. Instruments made of caoutchouc do not however stand the wear and tear, and high temperature of this country, and consequently, flexible stethoscopes, so far as India is concerned, are not likely to come into general use. For the best mode of using the instrument, and its value in aiding diagnosis, and demonstrating the progress of morbid phenomena, we cannot do better than refer to the pages of Dr. Walshe's book treating on Auscultation.

The measurement of the expansion of chest in health and disease, is a subject not so much attended to, as we think it should be. Dr. Sibson has investigated it very fully, and described an instrument by which such measurements may be accurately registered from time to time. We quote Dr. Walshe's description of the instrument, and the results obtainable from its use.

"In principle a callipers, of which one branch is movable; this instrument is capable, by means of an index and dial fixed to its movable branch, of indicating any change in the antero-posterior diameter of the chest or abdomen, even to the one-hundredth part of an inch, and has enabled Dr. Sibson to establish the following,

among numerous other propositions concerning the respiratory movements in health. In the robust male, the forward movement of the sternum and of the seven upper ribs, ranges from one-fiftieth to one-fourteenth of an inch in ordinary inspiration, and from half an inch to two inches during deep inspiration. On the five lower ribs the ordinary movement is less, and the forced movement greater, than over the upper seven. The movement is somewhat less on the left side than the right, below the second rib. The ordinary abdominal movement is about a quarter of an inch, the extreme ranging from about half an inch to an inch and a half.

"Unless the expansibility of the chest be directly as the forward motion of the anterior parts of the ribs, the indications of the "Chest Measurer" do not accurately express variations in the amount of the former. This is seen in health. The instrument shows, according to its inventor, that the forward motion is in the male greatest, during calm breathing, superiorly, least inferiorly; while, during forced breathing, the lower ribs play relatively more than the upper; now the eye and circular measurement teach us that the exact reverse is the truth in regard of the really important clinical fact—expansible action. Again, when the costal cartilages are stiffened by age or precocious ossification, the expansion may be greater materially than in the ratio of forward costal motion: the converse state of things will exist in youth. In disease, too, the forward motion of the chest, and its lateral expansion, may be very differently affected: in a case of large excavation under the left, and consolidation with small excavations under the right clavicle, the lower part of the sternum and adjoining cartilages receded visibly during inspiration, yet a fair amount of circular expansion was produced by the act. The deceptive influence of the torsion-movement of the ribs (which will apparently increase or decrease the amount of their forward motion, according as the movable rack is fixed near their lower or upper edge) must be borne in mind; the very delicacy of the instrument might otherwise mar its utility. But in localising with precision deficiency or excess of antero-posterior motion, and in estimating changes from day to day in the amount of either, the indications of the "Chest Measurer" are greatly superior in perfection, it need scarcely be added, to those furnished by application of the hand."

In the second part of the book, we may instance the section on progressive chronic consumption, as containing all that is at present known, on the subject. Dr. Walshe does not feel inclined in a practical treatise like the present, to discuss the nature and origin of tubercular deposits. Indeed, while those learned in micrological lore, can come to no definite conclusion, practical men may safely leave the subject alone.

Virchow, we are told, has lately announced the encouraging doctrine, that "the cells present in tubercle may be relics of epithelial cells, *or* of some other natural product; *or* they may be related to, or identical with, exudation cells, *or* pus globules, *or* to and with the cells occurring in cancerous growths, *or* in typhoid infiltrations." So that tubercle may be any conceivable thing, except that which the unassisted eye and clinical observation prove it to be—a distinct and definite product, distinguishable from all others, both in its physical attributes, in its local evolution, and above all, in the systemic diathesis of which it is the material exponent."

A subject of much interest to medical men in India, is the antagonism between malarious diseases and those of tubercular origin. There are other diseases more or less antagonistic to tuberculosis—and some, which appear to be more or less attractive to it, but in none is the broad line so clearly marked, as in the instance above referred to. Dr. Walshe observes:—

"Although exceptional facts are now and then encountered, observation on a broad basis, in various parts of the world, amply confirms the original discovery of Wells, as to the antagonism of ague and phthisis. Malaria appears to generate a condition of blood, even when the poison fails to induce any of its ordinary effects, almost absolutely incompatible with vigor of the tuberculous diathesis. Removal of persons already phthisical to marshy districts frequently proves favorable, and sometimes even arrests the pulmonary disease, without of necessity inflicting upon them any of the specific evils of paludal poison. Now, if this be true, inasmuch as marshy districts carry with them one condition favorable to the developmennt of tubercle, viz., proximity to the level of the sea, it would follow the antagonistic influence of the actual air, intermixed with paludal exhalations, must be very strong."

We think it will be generally admitted that the above quoted observations are essentially correct. According to our own experience, phthisis is a rare disease, in those districts where malarious fevers prevail, and not uncommon in situations where malaria is but slightly developed.

Some authors are of opinion that chronic alcoholism exercises a prophylactic influence, in warding off the tendency to tuberculosis. It is stated that softened tubercle is but rarely detected in the lungs of drunkards, although samples of crude and cretaceous tubercle, and "cicatrices" have been found under those conditions. Publicans, it is

stated, who, as a rule, consume their own vendibles on a liberal scale, do not suffer from phthisis in the proportion that other sections of the population do. We are not quite prepared to subscribe to this theory, and those who do so, cannot but admit that the remedy is worse than the disease.

With regard to climate as a predisposing cause, it may safely be stated there are no conditions which render phthisis an impossible disease. *Fuchs* shows that consumption is most common on the sea level, and that it diminishes with increase of elevation to a certain point. Some writers have considered that phthisis decreases with vertical elevation, and that provided a sufficient height above the sea be obtained, it disappears altogether.

We are not aware that the experience of our mountain regions in India has been brought to bear on this point. But the field for observation is daily extending, and it is to be hoped that sufficient data may be found on which to arrive at some definite conclusion. What we want to know is, do the aboriginal tribes inhabiting the elevated plateaus of the Neilgherry and Himalayan ranges, ever become victims to phthisis? Do the children of Europeans born and bred on the Hills, manifest any proclivity thereto? and, lastly, what is the effect of a Hill residence on the native population transplanted from the low country?

With regard to the treatment of phthisis, our author has nothing new to offer. He simply enumerates the "specifics" which, from time to time, have been recommended, and dismisses them, with the exception of cod-liver oil, in so many words as it takes to describe them.

This latter valuable therapeutical agent he considers does "indubitably possess the power of prolonging phthisical life."

In the appendix, Dr. Walshe alludes to the experiments of M. Tabarié on the treament of phthisis by the compressed air bath—which, we are told, slackens the pulse and respiration as a rule; drives the blood to the surface, excites the appetite, and throws into the system an excess of oxygen.

Some few cases have been recorded, in which this treatment has been pursued in the first and second stages of the disease with apparent benefit; but its enthusiastic followers are not yet prepared to show that the improvement in question might not have resulted from other causes—and consequently, we want more experience to determine how far it may be useful in tubercular diseases.

It may be within the recollection of many of our readers, that a few years since our trans-Atlantic brethren introduced a system of cauterization of the air passages in the treatment of chronic laryngitis and incipient phthisis. Some ingenious gentlemen, we believe, went so far as to say that they had applied caustic solutions to the larynx *below* the true vocal cords, and we are not quite sure, if others more enthusiastic than the rest, did not propose curious instruments for exploring, cauterizing and injecting the larger bronchii and tubercular cavities. We rejoice to find Dr. Walshe setting his face against such mischievous interference, with delicate organs, and in agreement with ourselves that it is impossible to apply caustic applications, in the manner described. We quote his very sensible remarks on this point:—

"That considerable relief of laryngeal irritation, improvement of the voice, diminution of dysphagia, and an easier condition of breathing may be obtained in the laryngeal affections attending phthisis, by sponging the back of the pharynx, the epiglottis, and the confines of the upper orifice of the larynx with a strong solution of the nitrate of silver, cannot be doubted. The fact is exemplified in every-day practice. But how stands the evidence as to the alleged utility and practicability of sponging the interior of the larynx itself, and of injecting the bronchial tubes, and the interior of pulmonary excavations? The following are the inferences which I feel justified in drawing from my own observation, fortified by the extended experience of others.

(a) No proof exists that the interior of the larynx, at and below the true vocal cords, has ever been reached with the sponge and probang in the living subject. The feat is of most difficult accomplishment in the dead body—an amount of force being required, which would be utterly unjustifiable in the case of the living person.

(*b*) The utter fallacy of supposing that, because a hollow tube, passed beyond the root of the tongue, influences the flame of a candle held before its external orifice, therefore the internal end of that tube has reached the trachea, has been fully proved. It has been shown that if a hollow tube be purposely pushed into the œsophagus, almost to the cardiac orifice of the stomach, the flame of a candle will be drawn to, or blown from, the orifice with inspiration and with expiration.

(*c*) I have made numerous attempts with a curved silver catheter, provided with a gutta-percha hollow bell at the external end, to reach the trachea; but I have never felt satisfied I had succeeded.

(*d*) There can be little doubt that the failure to reach the interior of the windpipe is matter for congratulation to both patient and operator. For occasionally an unusually large quantity of the fluid

injected from the catheter, accumulates about the upper part of the larynx, and not being instantly sputtered away by the convulsively energetic cough that ensues, a few drops make their way into the larynx. The terrible suffering that follows and holds on in a more or less aggravated form for some while, shows that disastrous results must follow, were any quantity of the caustic fluid really thrown into the tubes.

(*e*) In a word, it appears to me, the alleged injection has never been demonstrably executed; and were a process invented by which it might be effected, I believe its execution would be unjustifiable."

We must here bring our brief notice of this excellent work to a close, not, however, without recommending those of our readers in want of a faithful guide to the study of diseases of the respiratory organs, to give it a place in their book-shelves, assuring them that a careful perusal of its contents, will well repay the labor and small outlay involved.

Remarks on the uses of some Bazaar Medicines, and on a few of the common Indigenous plants of India, according to European practice. By EDWARD J. WARING, Esq., Physician to His Highness the Maharajah of Travancore. Travancore Circar Press, 1860.

THE advance of education amongst the natives of India has nowhere been more successful than in the special subject of Medicine, and the collateral sciences.

It has been our pleasing duty to refer in a former article to the progress of medicine under the fostering care of zealous and enlightened missionaries, in the barbaric capital of the Deccan; we now have to notice, briefly, the praiseworthy efforts of a gentleman holding an important position in the capital of the Travancore Province, to disseminate sound and useful medical knowledge, amongst the native practitioners residing in that territory.

Mr. Waring, whose important contributions to Indian Materia Medica, are too well known to need any eulogy from us, has compiled a plainly written description of the principal bazaar medicines, with the uses to which they may be applied, chiefly as he tells us—

"With the view of putting the District Vaccinators of Travancore "in possession of the knowledge of the means by which they may

"alleviate pain, and in some instances, it is to be hoped, cure the "diseases of those around them in regions where medical aid is not "procurable."

"It is not pretended that the plans of treatment advised are "always the best which could be adopted, but it is rather intended "to show to what purposes of practical utility these common bazaar "medicines may be applied in the absence of better or more effi- "cient remedies."

"Neither is it pretended that the whole of the properties of each "medicine have been detailed, because it has been felt that the ap- "plication of even these simple medicines in some diseases requires "a certain amount of discrimination, such as a regular medical "man alone possesses, and that if wrongly employed, they may do "harm. Vaccinators, or others who follow the advice and prescrip- "tions given in the following pages, may feel assured, that with the "exercise of ordinary prudence, if they fail to do good, at any rate "they will inflict no injury."

We have no hesitation in recording that the task which Mr. Waring proposed to himself, has been admirably executed. The directions for the uses of the various drugs, and the conditions under which they may be employed, are so simple and easy of comprehension that the most ignorant hukeem, or vaccinator, able to read and understand his own language, cannot fail to acquire a considerable amount of useful information, from a study of the little work before us.

The first part contains a list of medicines to be found in every native bazaar, and when we mention that the list contains aloes, alum, arsenic, assafœtida, bonduc nut, borax, camphor, castor oil, catechu, chiretta, croton seeds, cubebs, galls, ginger, ipecacuanha (country), leeches, lime water, limes, margosa bark, mustard, nitre, opium, pepper, plumbago, pomegranate, salammoniac, sarsaparilla, senna, sulphur, acetate copper, sulphate of copper, sulphate of iron, and wax (for cerates), it will be evident that the native practitioner has no mean remedial agents at his disposal, provided that he possesses the knowledge of using them aright.

The second part gives instructions for the preparation of arrow-root, sago, chicken and mutton broth, for the use of the sick, and the directions are so clear that there should be no difficulty in obtaining these adjuncts to medical treatment, in a wholesome and nutritious form.

The third part contains an index to the more common diseases of natives of this country, with references to the medicines or special preparations applicable. We quote the

following paragraphs in illustration of the usefulness of this portion of the volume.

"*Rajah Boils or Carbuncles.*—When these begin to form, apply "hot water fomentations (177), and if there be much heat and "pain, apply eight or ten leeches, not on the swelling, but close "round its edge (76). You may also apply the sal ammoniac lotion "(143,) and afterwards a rice poultice (137). If the pain is so "severe as to prevent sleep, give opium, as advised in para. 114. "Carefully follow the instructions given. When an ulcer forms, ap- "ply a toddy poultice (150), and twice a day pour water on it from "a height, as advised in para. 172, in order to loosen or bring away "the slough or core. If the ulcer smells very badly, apply a "charcoal poultice (45) instead of a toddy one, and daily wash it "well with a solution of borax (27). Go on with this treatment "till the slough or centre portion comes away; after which it may "be dressed with wax ointment (180) or any of the other applications "advised for ulcers. Throughout the whole of the disease, espe- "cially after ulceration commences, the patient's strength should be "supported by an animal diet, decoction of sarsaparilla (144) or "margosa (95) and by mild stimulants. These boils require to be "opened by a free cut, thus + the whole length and breadth of the "tumour, but it is not advisable to do this without the assistance or "advice of a regular medical man, as many tumours are called Rajah "boils by the natives, which are not really so, and if the incision "be made in a wrong kind of tumour, a great deal of mischief might "be done."

"*Diarrhœa.—For that which precedes Cholera*, give alum powders "(14), *when long standing or when no fever is present*, try either cate- "chu (41), galls (58), decoction of pomegranate rind (132), bael sherbet "(22), spogel seeds (146), or blue vitriol 154. *When it is connected "with acidity of the stomach*, give lime water (83). *When it arises "from eating too much or indigestible food*, administer an emetic, or "begin at once by giving a full dose of castor oil (39). The cause "being thus removed, the effect will cease. *If fever is present*, give "country ipecacuanha (75) and the decoction of spogel seeds (146). "Thick arrow-root conjee is one of the best articles of diet which "can be taken."

These extracts will serve to show the scope and nature of the work. It does not profess to contain anything novel or erudite, but for the class of persons for whom it was compiled, we believe it to be a safe and trustworthy guide. It is well printed in English and Tamil, the English on one page and the Tamil on the opposite, and the clearness of the type, and correctness of the printing, speaks well for the capability of the Travancore Circar press. We hope the little volume will be as popular as it deserves to be, and we

should be glad to see it in the hands of every vaccinator employed under the Madras Government.

In noticing briefly the successful results of medical education in India, we would desire to point out to those engaged in the good work, that the tendency hitherto has been to lay too much stress upon the European Materia Medica, to the neglect of that immediately at hand. This is, of course, one of the natural consequences of the general introduction of European medical science, but it is one which we should like to see guarded against, and we are quite certain that a more general exposition of the uses and objects of the common country medicines, to our College students, would not only be of vast assistance to them, in their future career, but also economical to the State. The expenditure of European medicines, in our Civil Hospitals and Dispensaries is something enormous, and much of this might be avoided, without the slightest injury to the sick, by using the simple remedies, obtainable in every Indian bazaar. Native subordinates *will* use cinchona bark, or quinine in all cases of fever, although probably not one case out of ten actually requires the exhibition of those remedies. Galls, bonduc nut, black pepper, and margosa are equally efficacious as bark in the treatment of the milder form of intermittents. In the choice of purgatives and emetics—the European article is generally preferred to the neglect of the indigenous one. The fact is, our students are taught the uses of all drugs belonging to the British Materia Medica, theoretically in the lecture room, and practically in the hospital wards, and seeing their teachers confine themselves to such remedial agents, they easily fall into the mode of practice, the results of which are patent to them, learning at the same time to despise those useful drugs which are always at hand, and which have been proved to be very efficacious substitutes for the more expensive and foreign articles.

Mr. Waring has done good service from time to time in directing attention to this important matter. Since the days of Ainslie, no one has so successfully labored in the comparatively untrodden field of Indian Materia Medica, and we trust that the ultimate result of his investigations, will be a more general appreciation on the part of the European and Native practitioners in this country, of the valuable remedies lying at their feet.

PART III.

MEDICAL MISCELLANY.

No. 1.—*Case of Ascites complicated with Pregnancy.* By Native Surgeon MOODEEN SHERIFF, Triplicane, Madras.

THE following case of Ascites, which came under my observation in the month of February last, presents some points of great interest.

PAUBOO BEE, Æt. 34.

2nd February 1860.—A short, stout, muscular, Mussulmanee woman applied to me for advice, suffering from great distension of the abdomen from fluid in the peritoneum, with some anasarcous swelling all over the body. The respiration was much hurried, and she appeared very restless and anxious for relief. There is some palpitation of the heart, without any distinct abnormal sound in the organ on applying the stethoscope. Pulse weak and very frequent. Bowels and urine said to be costive and scanty respectively.

History.—From the commencement of last year, this woman was twice under my treatment for ascites within about six months, and the disease being then in its incipient stage, yielded rapidly to the use of brisk purgatives and diuretics. For about four months after this, the patient seems to have been in the enjoyment of good health, and again about the end of this period, *i. e.*, two months previous to her present ailment the abdomen began to enlarge, and gradually to attain the size described above. The patient is a married woman, and mother of three healthy children, the last being about three years of age.

The patient being in very poor circumstances, and not in a condition, from the very advanced stage of the disease, to be treated as an out-patient as on former occasions, I advised her to become an in-door patient of the Triplicane Dispensary, and she was accordingly admitted into the hospital under Dr. Duff's care.

3rd February.—She was tapped yesterday by Dr. Duff and the fluid discharged was clear and fourteen and a half lbs. in quantity. She is quite relieved from dyspnœa, &c., but seems very weak. Urine scanty, and not albuminous, and there is pain in the loins. Palpitation of the heart more per-

ceptible, chest clear on percussion, and there is no abnormal sound detectable by stethoscope, either in the heart or lungs. The liver and spleen appear to be of normal size. She had three doses of brandy and water yesterday.

To have the following draught three times daily, with a nourishing diet.

Ry. Sp. Æther. Nit.
Tinct. Scillæ.
Tinct. Ferri. Mur. *aa.* ♏ xv.
Mist. Camphoræ ʒ iss. Ft. Haust.

20*th March.*—She has taken the diuretic draught regularly, with occasional purgatives of jalap and elaterium without any apparent benefit. The fluid has again accumulated to a large extent. There is great restlessness from dyspnœa. Paracentesis abdominis performed again, and about the same quantity of fluid discharged. Feels very weak and exhausted. To have a few doses of arrack and water. Soup and conjee for diet.

22*nd.*—Feels relieved, but very weak. To have recourse again to occasional purgatives and daily use of diuretics without tinct. ferri. mur; as the latter does not seem to agree with her stomach. Nourishing diet with one measure of gin.

28*th April.*—The abdomen is enlarged again for the third time since admission. Great dyspnœa, &c. Tapped and about 12 lbs. of clear serum drawn off. The patient appears to be in a great danger and is scarcely able to speak from exhaustion and debility.

Ry. Arrack ʒ ss.
Water ʒ ss.

Ft. Haust to be given every hour till four doses are given, and then to have congee and wine three or four times a day.

29*th.*—About 2 o'clock this morning, I was sent for in haste to see the patient, who was said to be very restless and dying, and before I got near her, she was delivered of a dead male child. The child was fully developed, but of rather small make, as if it had been only a 7 or 8 months' fœtus. The delivery was quite unexpected by the patient and her friends as well as by ourselves. The placenta was discharged with the child. The patient is now dangerously weak. Pulse very feeble and frequent, 110; body cold from perspiration.

Ry. Sp. Ammon. Arom. ʒ ss.
Tinct. Opii. ♏ v.
Mist. Camphor ʒ i.
Ft. Haust. every hour till she is rallied.

9 A. M.—Appears better and more animated; had short a sleep; no complaint; pulse 90.

Omit. Med.
Chicken broth and congee for diet.
Port wine 1 measure.

1*st May.*—Much better; the anasarcous swelling on her body and feet, &c., is fast disappearing. Wishes to have more to eat.

Full diet.
Continue wine.
No medicine.

1*st June.*—Quite free from all dropsical symptoms. Much improved in condition.

8*th.*—Discharged.

Remarks.—There are two points of great importance to be observed in this case with regard to the history of the disease. The first is the spontaneous recovery of the patient from ascites after parturition, which had taken place about 17 hours after the performance of paracentesis abdominis. With the exception of a few doses of stimulants, which were necessary, immediately after the delivery, to rally the system from a sinking state, no other medicine had been resorted to at all, till she was perfectly recovered; and although the disease was of so very obstinate a character, as will be seen from the case, yet, it rapidly disappeared of its own accord. There is nothing in the circumstances of the case to account for such favorable termination of the disease, unless it is attributable to the sudden relief and change that were produced in the system of the patient, after the delivery, by the removal of pressure from the vena portæ, and other large veins of the abdomen.

The second point is that the patient was quite unaware of her being pregnant, till she was all of a sudden confined of the child. She is a married woman of good character, and there was no reason to conceal the pregnancy as she lived all along with her husband as usual, particularly during the period of temporary relief from the disease, about four months previous to her last ailment. The patient, although an experienced woman, being a mother of three children, positively states, that nothing had occurred to her to lead to the suspicion of pregnancy, for several months previous to her confinement, and that her catamenial discharge was stopped about 16 months before this last occurrence, at the beginning of the previous year, and it had never returned.

I have seen the patient several times since she left the hospital, the last being on the 9th September 1860, when she brought her children to the Dispensary for medicine, and she was then in good and robust health.

No. 2.—*Case of Aneurism of the External Carotid, successfully treated by Ligature.* By John Shortt, M.D., Civil Surgeon, Chingleput.

Sooboreddy, Æt. 34, Convicted Prisoner.

Admitted 12th October 1857, with a pulsating tumour on the right side of his neck occupying the superior carotid triangle; the pulsation is felt at the inner side and in line with the Pomum Adami, on the outer side the tumour feels firm and inelastic. On applying the stethoscope, a distinct bruit is heard, and pressure on the carotid at the root of the neck arrests the pulsation in the tumour. The patient states that about eight years ago (since his admission into jail) a small lump made its appearance, which has gradually increased to its present size, (that of a medium sized orange); it gives him no pain beyond that of its increase and constant throbbing; the patient is healthy-looking and of good general health. I endeavoured to adjust weights on the tumour and course of the carotid artery from date of admission to the 4th November, without apparent benefit.

The difficulty in adjusting pressure on the neck without any particular apparatus induced me to give it up and substitute deligation. On the 5th November the patient was brought under the influence of chloroform, and a ligature placed on the common carotid at the root of the neck immediately below the omo-hyoid muscle, the operation lasted for about a quarter of an hour altogether. A large superficial branch of the external jugular vein had to be divided, and it bled so profusely, uncontrolled by pressure, that I was obliged to place a ligature on it; the pneumogastric nerve, and its accompanying vein were undisturbed. The patient took three drachms of chloroform and stood the operation well, excepting some head-ache from which he suffered for a few days. He did well. The greater part of the wound healed by the first intention. On the 13th, or 9 days after the operation, the ligature on the vein came away; and on the 16th, or 12 days after the operation, that on the artery. On the 30th the patient was discharged cured.

Remarks.—It is now three years since the operation was performed, and ever since the patient has been at work, as a convict on the roads. He was admitted for two days with fever in December 1857, but, excepting this instance, he has never approached the hospital. He is a spare man, 5 feet 3 inches in height, weighs at present 103 pounds, and continues in the best of health.

No. 3.—*Case of Ileus (?); Simulating inflammation and intus-susception of the Bowels; non-action of Bowels for fifteen days; stercoraceous vomiting; ultimate recovery.* By M. C. FURNELL, Esq., d. d. Sappers and Miners, Dowlaishwarum.

THE patient in this case is the subject of a double hernia which has occasionally been very troublesome to him. He is a mechanical Engineer employed in the Dowlaishwarum workshops, and was, at the time of my assuming medical charge, just recovering from a severe attack of peritonitis, attributed to the descent of his old hernia. On the morning of April 29th I was called to his assistance, and found him suffering from most severe pains in the abdomen. These pains were most severe over the iliac regions, *and were increased on pressure,* every now and then coming on with a paroxysm evidently very acute; *pulse* 110; moderate volume; he was weakly from his previous sickness, which rendered venesection unadvisable. He was ordered twelve leeches to each side, to be followed by hot poppy-head fomentations; and calomel grs. x. c̄ pulvis opii. gr. i. directly, to be repeated in *three* hours if necessary.

6 P. M.—Pulse 68; tongue moist; bowels not relieved; great pain of a shifting character, *not increased on pressure.* The inguinal regions carefully examined; the canals patent; the fingers easily passed up; no feeling of any gut or tightness; ordered an aperient carminative draught and an enema of castor oil directly.

April 30th.—Passed a bad night; some relief from the enema, which brought away a few dry scybala. The pain returned about 2 A. M.; he is now complaining of pain, but it is not so severe as yesterday; countenance anxious; tongue moist and clean; great thirst; pulse 82, moderate volume. My attention was drawn by the attendants to what he had vomited, which was about a pint and a half of dirty brown looking

fluid, with a few pieces of undigested potatoe therein. There is pretty constant sickness, and he finds relief only from cold water. The bowels not moved; ordered calomel ℈ j., directly, to be followed in an hour by a draught made of ol. ricini, mucilage of acacia and peppermint water. To have an enema of ol. ricini., ol. tereb. and magnes. sulph. each ℥j. in conjee water ℥xvj. to be repeated if necessary.

May 1*st.*—A bad night; sickness continues; no motion; pulse 76, soft; tongue clean; can retain nothing whatever on his stomach, even a simple effervescing saline with one or two drops of hydrocyanic acid is rejected. Dr. Beaman was kind enough to see the case with me this morning, and it was determined to see what an injection of a large quantity of warm water would do, accordingly a long flexible tube having been carefully introduced as high as possible, about 30 to 40 ounces of warm water were thrown up very gradually and retained about half an hour, coming away without any fæces, and but slightly colored. The sickness continuing, he was ordered a drop of creasote every hour.

7. P. M.—He has suffered much all day with hiccough, vomiting, &c., and a writhing spasmodic action of the intestines, which can be plainly perceived moving in a slow serpentine manner under the covering of the abdomen; pulse remains 70 to 72; tongue moist; bowels obstinately costive. It became now very evident to me that it was useless to continue any attempt to force, as it were, my patient's bowels open. The stomach obstinately refused to retain aperients, and enemata of large quantities of warm water, affording temporary relief from the warmth, came away unstained. I began also to take a very different view of the malady before me. The first day I saw my patient, his previous history—intense pain increased on pressure, quick pulse 110, and thirst, all led me to conclude inflammation had again arisen. Subsequently I thought, and I think Mr. Beaman agreed with me, as the symptoms of inflammation subsided, but the tormina continued, that most probably either a portion of the gut had become internally strangled or intus-susception had taken place, and I was anxiously awaiting the reappearance of symptoms of inflammation which would warn me nature had commenced her efforts to rid the body of the impediment, whatever it might be.

But here we were now on the evening of the 3rd day. Still the intense pain recurring in paroxysms, still the sickness and stercoraceous vomiting, still intense thirst, *but the pulse* 72,

and the pain not increased by pressure directly, but brought on if the pressure was kept up or suddenly applied. I began to remember having read, I scarce can tell where, of a disease called the "Iliac passion," the "Miserere;" so I ordered my patient a full dose (50 drops) of laudanum with some spirits of nitre and an enema of warm water containing some more tinct opii.

May 2nd.—Passed an easier night; slept somewhat, and obtained some relief of the intolerable pain; pulse 72, firm; tongue clean and moist; no motion; matter vomited dark brown, gritty, bilious and mucous. The abdomen appears constricted across the umbilicus, but he is altogether much easier than yesterday. Ordered.

Tinct. Opii. ʒ ss.
Spt. Æther. Nit. ʒ iij.
Creosote. ♏ ij.
Aq. Cinnam.
—Pura. *aa.* ℥ iij.
Sacchari. ʒ ss.

Mix and make a ʒ vj. mixture, ℥ j. every two or three hours, oftener if necessary.

Ry. Ol. Olivæ ℥ iss.
Tinct. Opii. ʒ iss.

Make a Liniment. to be gently rubbed on the abdomen if the patient can bear it.

Repeat enema of warm water.

Not to be too prolix this treatment afforded great relief, but did not solve the malady.

At bed time he would have an opiate draught and pass a good night, sometimes better, sometimes worse, but generally comfortable; in the morning he awoke refreshed and hungry, took his food which remained for about two hours, when vomiting and the writhing spasmodic action of the bowels would supersede; this was followed by most distressing hiccough, lasting with little or no intermission all day, to give way about bed time and be followed the next day by much the same symptoms as those detailed above. Sedatives and antispasmodics were tried in turn, and generally with the most passing effect; several times aperients were recurred to, but always causing great suffering, and no effect, and so things lasted until the evening of the 15th, seventeen days from the advent of the attack. On this day he suffered a good deal, being unable to retain any food on his stomach, so I ordered him a strong

beef tea enema and the abdomen to be shampooed; shortly after the administration of the enema, and whilst the belly was being shampooed, the patient describes having felt a snap as it were within him, this was followed by the most copious alvine dejection, and an instantaneous cessation of hiccough. Motion after motion followed, the quantity passed being enormous, and from that time the man has steadily recovered without a single untoward symptom.

Remarks.—The above, I think, affords a good example of the disease called Ileus or the "Iliac passion;" a disease concerning which systematic works contain but scant information. Dr. Macaulay describes it as "a severe and "painful affection of the bowels, in which the patient is "racked with most acute pain, accompanied with costive-"ness and vomiting, and this not only of the contents of "the stomach, but also of bile, and even of matters proceed-"ing from some portion of the intestinal tube yet farther "from the stomach." He goes on to say, "if the iliac "passion be not very quickly relieved, we may expect "soon to find heat, thirst, restlessness, quickened pulse, and "pain in some part of the abdomen on pressure." In this case, somewhat strangely, this sequence of things was reversed. Our first symptoms pointed to an inflammatory state of things which subsequently subsided. As to the cause of this attack, without entering into the discussion of the causes producing spasm, inverted or non-action of the intestinal tube, &c., I should feel inclined to attribute it to the influence of some band of organised lymph formed in the previous attack of *peritonitis*, acting as a source of irritation or impediment to the intestine.

No. 4.—*Case of Nephria.* By George Bidie, M.B., Civil Surgeon, Guntoor.

Anasarca is so often met with in Indian practice, that it becomes an important duty to spare no pains to illustrate its pathology, and if possible, render its treatment more satisfactory. As in more temperate climates, so in India, general dropsy is but too often a symptom of granular disease of the kidney. Indeed when we consider how ill provided the lower orders of the community are with clothing to enable them to encounter vicissitudes of temperature, and that at night *their lodging is*, but too often, *on the cold*

ground, it seems wonderful that renal disease is not a much more common complaint. In the diagnosis of disease of the kidneys, the most trustworthy evidence as to the nature and extent of the morbid changes that have taken place in these organs will be gathered from the physical and chemical properties, contents, &c., of their secretion. During the progress of granular degeneration of the kidney, albumen has been so often found to be a constituent of the urine, that its presence, in connection with other symptoms, is justly regarded as proof positive of the nature of the disease. This so far is a legitimate conclusion and leads to safe practice, but when we regard the absence of albumen in the urine as yielding equally satisfactory evidence of the non-existence of granular disease, notwithstanding the presence of other symptoms of the affection in question, then we step beyond the bounds of legitimate deduction. It is notwithstanding, however, but too often the custom to regard a case of anasarca as depending upon some other affection, than granular degeneration of the kidneys, if the urine be found to yield no traces of albumen.

The following case will shew that, notwithstanding the absence of that symptom, there may still be fatal granular degeneration of these organs in progress.

SHEIK MEERAH, Æt. 47, Mahommedan Pauper.

History.—Was admitted on the 8th of June complaining of anasarca, debility, &c. Stated that about four or five months previous to admission he had suffered from a smart attack of fever, which lasted a few days, that his body then became suddenly swollen and his urine scanty and high coloured. Had at various times suffered from dull pain in his loins, but did not remember whether or not he had ever passed any blood in his urine. Had been subject to anorexia for more than a month, but had never been troubled with vomiting or diarrhœa. Had consulted a hukeem and "taken much native medicine."

Present State.—Is so weak that he can only sit upon his cot, with assistance. Whole body more or less disfigured with œdema, which pits deeply on pressure; but the swelling is most marked in the extremities. Eyelids like small cushions, and the side of forehead on which he has been resting, bears a deep imprint of the uneven surface of his pillow. Eyes have a dreamy expression, and he answers questions hesitatingly. Has a dull pain in his loins. Percussion sounds over regions of heart and lungs normal; bruit

normal, in all postures. On left side slightly diminished vesicular murmur, and increase of bronchial sound. Heart's sound quite natural. Skin cold and clammy; pulse small and weak; tongue white, rough and dry; bowels inclined to be costive; micturates two or three times in 24 hours, passing, in the whole, from six to ten ounces of brownish alkaline urine, of the spec. grav. of 1·012. On being permitted to rest for a few hours the urine exhibits a flocculent deposit; on being heated it becomes hazy, but is rendered clear by the addition of nitric acid. The acid causes effervescence, and renders the colour of the urine more intense. On decanting the clearer portion, from a specimen that has been permitted to rest for some hours, the turbid remainder presented under the microscope the following objects—Fig. 1. *a*, amorphous urate of ammonia; *b*, epithelial cells. Figs. 2 and 3. *c*, spermatozoa; *d*, *d*,' casts of uriniferous tubes.*

Treatment and Results.—For two days after admission a smart purgative action was maintained, by doses of the pulvis jalapæ compositus; but as the dropsy continued to increase, while the patient's strength was rapidly failing, and well marked symptoms of uræmia and œdema of the right lung having supervened, he was ordered a diuretic of digitalis and the bitartrate of potash in some infusion of chiretta. Wine and generous diet were at the same time allowed. The diuretic did not in the slightest degree increase the flow of urine, or alter that fluid. Gradually the dropsical effusion increased in quantity, and drowsiness terminated in coma. He died on the 16th, and up to the last there was not a trace of albumen in the urine.

Remarks.—It has long been a vexed question, whether or not diuretics should be employed in the dropsy of this disease. If albumen be present in large quantity in the urine, indicating the existence of much irritation in the kidney, doubtless the use of diaphoretics or purgatives seems more rational. That the action of a diuretic, however, during the existence of irritation in the kidney, will aggravate the morbid condition, is not in accordance with facts concerning other organs, for, in may instances, we administer remedies, that act as stimulants of an organ, to relieve in it an existing irritation. At all events when the nervous centres, or the organs of circulation or respiration are in danger of serious derangement of function, then we must

* We have not been able to reproduce the original drawings forwarded with the case.—Ed. *M. Q. J.*

not scruple to employ the remedy most likely to avert the impending mischief. In the acute stage of the disease even, experience authoritatively tells us that such diuretics as digitalis and nitrate of potash, may be used with safety and the greatest advantage. We can therefore have no hesitation in using them in the more advanced stages of Bright's disease to relieve the dropsy, &c.

In diaphoretics I have but little faith, they being slow and uncertain in their action. The acetate of ammonia is perhaps the most trustworthy of its class, and I have seen its use, in conjunction with the tinct. ferri. sesquichloridi, followed with marked benefit. The good result was, I think, however rather attributable to the depurative and tonic effects of the remedies than to their diaphoretic action.

Purgatives, in the absence of diarrhœa, are most valuable remedies, but we must never forget during their use how easily the nervous and vital powers of the natives of India are lowered to a dangerous extent, by such active remedies. For this reason the pulv. jalapæ comp. seems a preferable remedy, to elaterium or gamboge. No *post mortem* examination was allowed in this case, although I was most anxious to obtain one. The casts of the uriniferous tubes, however, present in the urine, left no doubt as to the exact nature of the disease.

No. 5.—*Case of Blindness of eleven years' standing, cured.* By George Mackay, M.D., &c. Senior Medical Officer, Neilgherry Hills.

On the 2nd November 1855, Mrs. ———, Æt. 30, an Indo-Briton, applied to me for medical advice. She was completely blind of the right eye, and could only distinguish light from darkness with the left. Said she had no other complaint. The loss of sight commenced eleven years before, at which time she applied to a medical officer for treatment. A medical subordinate who was present at the time she related the above to me, recognised the patient, and knew her story to be true, having seen her at the time she first complained of her sight failing. His account of the opinion then formed of her case was, that some disease at the back of the orbit, involving the optic nerve or the retina, was the cause of the loss of sight. At that time the right eye only

was affected. She could give no account of the remedies used, further than that she had employed many local applications. The loss of sight gradually but steadily increased, and she had been, for some time previous to her applying to me, in a helpless state. There was a sluggishness in the action of the pupils, but no other abnormal appearance in either eye. On questioning her minutely regarding her general health, she stated that the catamenia had long been irregular, and that she had a constant discharge from the vagina, generally of a white color, but tinged red once or twice in two or three months, at irregular intervals; she had no pain. Is the mother of four children, the youngest then four years old. By a vaginal examination the cervix uteri was found to be much enlarged, and the use of the speculum revealed great congestion, particularly of the anterior lip, with superficial ulceration.

Nitrate of silver was applied to the os uteri, a solution of alum directed to be injected into the vagina twice a day, the recumbent position strictly enforced, and the following mixture prescribed.

℞. Infus. Chirettæ. ʒ iss.
Ferri Sulph. gr. i.
To be taken twice a day.

8*th.*—Much the same. A copious white discharge seen through the speculum to be coming from the interior of the cervix uteri.

Nitrate of silver applied to the interior of the cervix uteri and the lips of the os very freely scarified.

Omit the alum injection; continue mixture.

12*th.*—Bled freely after the scarification on the 8th, and for a few hours complained of a burning pain from the caustic; but has had no pain since. There has been a watery discharge from the vagina, which, this morning, has become of a red color. There is slight improvement in her sight, she can distinguish objects though very indistinctly with the *right* eye, the left eye is much the same. Has been using an astringent injection the last two days.

Omit injection, continue mixture.

14th.—Menstrual discharge ceased, white discharge continues. Complains of a burning feeling in the stomach. Omit mist.

December 8*th.*—The local treatment has been interrupted by her having to attend on a sick relative, during which, however, she has felt the benefit of the improvement which

has been steadily taking place in her sight. On examination with the speculum this morning, the lips of the os uteri were found to be much reduced in size, less congested, but covered with red irritable looking excoriations, to which nitrate of silver was applied.

9*th.*—No uneasiness in the region of the uterus. Complains of headache, bowels confined.

R. Olei Ricini. ʒ vi.

To be given immediately.

17*th.*—Sight much the same; a vaginal examination this morning showed an increase in the local symptoms, a thick white discharge from the interior of the cervix, and the anterior lip more congested. Nitrate of silver was applied to the interior of the cervix, the anterior lip freely scarified, and the bleeding encouraged by a hot hip bath.

20*th.*—Bled freely after the scarification. On the 17th a dark colored discharge came away and has since continued from the vagina, with pain in the region of the uterus, for which fomentations have been used with relief. Bowels confined, pulse quick.

R. Ol. Ricini. ʒ vi. to be given immediately.

Cont. fomentations.

23*rd.*—No pain; discharge from the vagina is white and much diminished in quantity; says she feels well, and that her sight continues to improve.

Repeat Mixture.

28th.—An examination with the speculum this morning showed a decided improvement in the local symptoms. No discharge from the interior of the cervix. Anterior lip of the os still rather larger than natural.

Nitrate of silver was applied freely over the anterior lip of the os.

Cont. mixture.

It would be tedious, and it seems unnecessary to give a further detailed report of this case. The same system of treatment was continued, with the view of remedying the local uterine ailment, and restoring the general tone of the system. As these objects were attained, the sight improved. On the 19th January 1856, two months and seventeen days, from the commencement of the treatment, feeling well, the patient expressed a wish to visit her friends on the Neilgherry Hills, which she was permitted to do. She had then good use of both eyes, complained only of objects not appearing quite clear, and promised to return

for further treatment, in the event of her sight failing again.

Remarks.—This patient resided chiefly in the relaxing climate of the Western coast, previous to the date she applied to me. It was at Coimbatore she came under my treatment, and since that time she has lived on the Neilgherry Hills. This change of climate has no doubt been beneficial in confirming her general health and preventing a relapse. I have frequently seen her during the last four years, and she has never complained of a return of her former symptoms. Among the numerous sympathetic ailments, which accompany uterine and ovarian disease, I have frequently observed that patients complain of their eyes being affected, but this is the only case I have met with where the patient has been rendered so helpless from loss of sight.

It will be observed that the right eye was the first to fail, and it was the first in which improvement took place, though the loss of sight was more complete in it than in the left.

No. 6.—*On the employment of Pressure in the treatment of Buboes or Enlarged Glands.* By D. Macpherson, Esq., M.D., Inspector General of Hospitals.

[Dr. Macpherson, Inspector General of Hospitals, in a recent report, on the establishments at Singapore, submits the following observations which have been kindly placed at our disposal by the Principal Inspector General.—Ed. *M. Q. J.*]

"I may state that Assistant Surgeon J. Cowpar is in the habit of treating successfully, hard, indurated, enlarged glands in the groin, by the application of a truss, two to four hours daily. During the past year he had 16 Europeans under him for this usually very tedious and troublesome ailment, the truss was kept applied twice daily for two to four hours at a time, and all terminated successfully. In some cases the bubo disappeared under four days. But the average period required, to cause absorption of the gland, was nine days. I have some experience in the successful application of direct pressure by weights to buboes, but that adopted by Mr. Cowpar, is more under control, his treatment is so simple and efficacious, I would suggest that it may be made generally known; I have not met with it before."

No. 7.—*Case of Popliteal Aneurism, treated in the Bangalore Cantonment Civil Hospital.* By J. KIRKPATRICK, M.D., Surgeon to the Mysore Commission.

YAGAPEN, age about 35, male, caste Malabar, trade goldsmith. Admitted 4th September 1860.

Brought in from the Cantonment Jail Hospital. Is affected with a pulsating tumor in the right ham. Can assign no cause for it. Was sentenced to work on the roads on the 2nd April 1860, and was admitted on the 4th August 1860 into the Jail Hospital for a swelling of the right ankle and an ulcer on the outer side of the knee.

5th.—Compress applied. Opium 1 gr. every 3rd hour.

6th.—Passed a good night; continue compress.

11th.—When the compress was taken off the artery, the pulsation is barely perceptible, and no bruit can be heard with the stethoscope; reapply compress.

12th.—Compress removed altogether, the pulsation in the tumor is very weak.

15th.—Repeat clamp.

16th.—Renew clamp.

20th.—There is a slight pulsation on the inner side of the tumor, but the previous pulsation in the tumor has ceased altogether. He is this day discharged and sent back to jail.

This case is interesting, as being an example of a form of disease which may probably be said to be very rare among natives of this part of India, no case of the kind having previously come under my observation though my field has been rather an extensive one, and as illustrating the happy result to be occasionally obtained by the treatment of popliteal aneurism by compression of the femoral artery higher up the limb. As given in the foregoing notes, taken by one of the hospital dressers, the history of the case is by no means complete, and it is therefore desirable to enter into a farther detail. The man, younger probably than stated, more likely about 30, had a healthy appearance, and he had no recollection of having over-exerted himself, or of having experienced any sudden pain in the ham. He was admitted on the 4th of August into the Jail Hospital on account of pain and swelling about the foot and ankle, and of an ulcer surrounded by a good deal of swelling, on the outer side of the knee. For these ailments he was treated by the jail Apothecary, and the aneurism was not noticed till the swelling and ulcer had been removed. The pulsating

tumor in the ham then became evident, whilst the pain along the front of the leg and instep continued. An attempt was made in the jail to heal the aneurism by forcible flexion of the knee joint, but it was unsuccessful, as the pulsation in the tumor though lessened, was not arrested, and the patient was unable to endure the pain and irksomeness of the position. In consequence of this failure he was removed for treatment to the cantonment Civil Hospital, where for the first day the attempt to cure by bending the knee was again unsuccessfully tried.

On admission the tumor was about the size of a turkey's egg, tense and elastic, and pulsating forcibly in all directions, and it imparted through the stethoscope a loud, rough, rasping round. The treatment by strong flexion having failed, that by compression was resorted to, and the instrument used to effect it, was one kindly lent to me by Dr. Jeppson of the Dragoon Guards, with which he had a short time before cured a case of popliteal aneurism in a man of his regiment. The instrument consisted of two half hoops of iron hinged together at one side, and fastening by a pin at the other, thus forming a circlet which could be readily applied around, or removed from, the thigh. Attached to the middle of one half hoop was an oval pad, about five inches long by four broad, for the purpose of affording the counter bearing or pressure on the outer and back part of the thigh; and through a hole in the other half hoop passed a long screw pin, attached to the inner end of which was a small movable oval pad, about one and half inches long by one broad. This pad being propelled by the screw upon the course of the artery, the requisite pressure for obstruction of the circulation was effected. One instrument only was used.

It was first applied on the 5th, but it was not till the 8th that the patient began to wear it steadily; from this date till the 11th he allowed the clamp to be kept on almost constantly, its situation being altered occasionally, but the pressure was mostly made just above where the artery passes beneath the sartorius. Pulsation in the tumor was for some time quite arrested by the pressure. Opium was given to enable the patient to bear the pain, but great uneasiness was not felt. On the 11th, when the instrument was temporarily removed, the pulsation in the aneurism had almost ceased to be perceptible, the bruit in it was no longer audible, and the tumor it formed had become hard and inelastic. Next day the pulsation continued very weak

and the clamp was removed. On the 15th the pressure was renewed as a faint pulsation was still perceptible at the upper and inner part of the tumor. On the 20th the man was discharged cured and sent back to the jail, with instructions, however, that he should not be set to hard labour again for some time. He was considered cured although a slight pulsation at the upper and inner part of the tumor could be felt, because it was observed after repeated careful examinations that this pulsation remained permanently of the same strength and volume, that it was not checked by the pressure of the clamp, as the original pulsation in the tumor had been between the 8th and the 11th, and that there was a sensation experienced in examining as if a small distinct vessel were under the finger; it was inferred therefore that the pulsation felt was due to one of the anastomosing vessels which had become enlarged and which ran over the upper part of the tumor. The tumor at the time of discharge had become smaller, but it remained quite hard and inelastic, and the pain about the ankle and instep had gone, though there still remained a feeling of stiffness down the front of the leg.

The result of treatment in this case was very satisfactory, and contrasted well with what would have been the case had ligature of the artery been resorted to, although the time apparently occupied in applying the pressure was rather long: in reality, however, the solidification of the contents of the aneurism was effected within the three days, from the 8th to the 11th. Previous to the former of these dates the man was impatient under the treatment, and would not submit to the constant pressure of the instrument; and besides this difficulty, the instrument did not at first maintain its position on the limb, for having been made for the sturdy thigh of an English Dragoon, it fitted ill to the slender limb of the Hindoo patient. By lessening the size of the circle of the instrument the clamp was got to fit better, and then the pressure from it speedily produced the desired effect of completely arresting the circulation through the tumor. The cessation of pulsation, whilst pressure was maintained, continued till the 12th, after which the slight pulsation at the upper part of the aneurism was noticed, and it could not be stopped by renewal of the pressure on the place where this had been principally made. The subsequent application of the clamp was made to test the result.

P. S.—The following is a statement of the condition of the parts on the 18th November, that is, two months after the patient was discharged from the hospital. "There remains a diffused swelling not very apparent, in, or rather below the popliteal space, but no pulsation can be detected, nor is there anything audible with the stethoscope. On bending the leg a rather obscure hardness can be made out, measuring perhaps three-fourths of an inch in length and breadth. There is no pain whatever. This hardness is with difficulty made out, in closely examining the diffused swelling, which latter is probably kept up by a leather band lightly tied two or three inches lower down, and partly supporting the irons which are now on the leg, and preventing them from galling the ankle. The patient is employed daily in work about the jail compound. In examining the leg about a fortnight ago, I could detect a slight pulsation (as if caused by an anastomosing vessel) over and to the inside of the swelling, but to-day nothing of the kind is perceptible." From this account it may be inferred that, whatever may have been the cause of the slight pulsation which so long persisted in the tumor after the strong pulsation and aneurismal bruit in it had ceased, the disease was cured.

No. 8.—*Two Cases of recovery after being struck by lightning.* By Francis Day, Esq., F.L.S., Civil Surgeon, Cochin.

As recorded cases, of individuals having recovered, after being burnt by lightning, are apparently rare: the two following instances, which have come under my treatment, may be deemed interesting.

Case No. I.—At 5-30 p. m. on May 2nd 1856, at Bolarum, I was called to a Hindoo camp follower, named *Chinniah*, 16 years of age, who was said to have been struck by lightning. A scorched line extended from the occiput directly downwards, opposite the scapula branching into two, in the form of an inverted **Y**, the left branch being seven inches long, the right four. There was great excitement: he could hardly stand: and complained of headache, with burning in the stomach: his skin was hot: pulse 104: respiration natural.

He had been sitting during a thunderstorm, with his

back against the wall of his thatched hut: the electric fluid struck the roof, passed through it, and down the wall immediately above him, where meeting his back, that became the conductor; the roof was set on fire, and the wall marked as if charred with burnt stick.

Opiates were at once exhibited, and recovery ensued without a bad symptom, with the exception of the skin of his back for two or three days, being abnormally hot.

Case No. II.—On March 18th 1860, I was requested to proceed on board a vessel, becalmed some miles from Cochin. On my arrival, I found that an European sailor, aged 19, had been struck by lightning. He had a simple fracture of the left thigh and a wound on the forehead: whilst the whole length of his left forearm, more especially at the bend of the elbow, and down the left thigh, was burnt. The hair on the forepart of the thigh, and on the pubis, was completely singed off. He was quite insensible: pulse quick: very restless: constantly tossing about, and moaning: and had been in the same state for 48 hours

Two days previously, at 7 P. M., he had been aloft during a thunderstorm, furling the royals: and whilst descending, a flash of lightning struck the ship: he was at once rendered insensible, and fell striking the top sail yard, and near the deck coming into contact with the hen coops, which gave way, slightly breaking his fall. When struck, he was holding the tie of the top gallant yard with his left hand, his left leg being round the top gallant shrouds. His oil-skin jacket was burnt, and his shirt appeared like a piece of tinder. After having taken two doses of aromatic spirits of ammonia and laudanum, he became sensible. By April 14th, the fracture was pretty firmly united, and the burns nearly healed. He left for Europe on that date.

In the Madras journal, Vol. II, for 1840, page 272, will be found an account of private *Morton*, of H. M. 39th Foot, who was struck down insensible by lightning, whilst standing in the barrack room at Bangalore. The electric fluid had burnt and blackened his upper lip. When admitted in hospital, he was in a collapsed state, but rallied after the use of stimulants: subsequently Venesection was found necessary.

In the Cochin territory, many deaths occur annually from the effects of lightning: the slaves work in the fields with iron implements of agriculture, and in the event of the electric fluid striking these, the persons holding them are

usually killed. Should labourers seek shelter, by congregating under trees, the tree itself sometimes becomes the conductor, and those who are cowering round its base fall victims.

During the last year one ship has been struck in the Cochin roads, and one *en route* to the port; in these, and similar instances, where accidents to vessels, or loss of life occurs, they must be considered as due to the supineness or culpable negligence of the Captain. Masters of vessels are obliged to carry lightning conductors on board their ships, but not being compelled by law to fix them up, they are frequently, if not usually, kept out of harm's way in the hold: at least until some accident has happened, when they are at once fixed up in the position in which they ought to have been at first; there is no trouble in doing this, the conductors are not in the way, and nothing can be more easily detected, than their presence, or absence, on board a vessel.

The best forms of conductors for ships or buildings, are pointed at both ends: copper is superior to iron, as it does not rust so easily: rust being a non-conductor. Lightning conductors are well known not to attract, but merely direct the course of the electric current.

The first well authenticated facts, concerning the effect of the electric fluid on the human body, are those recorded respecting *Professor Richman*, of St. Petersburgh, who, on August 6th 1753, was examining his electric rod, but as there was no contrivance for discharging it when too strongly electrified, and he in an unguarded moment advancing his head close to it, his cranium became the conductor, and death was the instantaneous result.

Kirkes states, that in cases of death from the effects of lightning, it has been believed that the blood does not coagulate, but he adds, "the blood has often been observed coagulated in the bodies of animals killed by lightning, or an electric shock."

The effect of a stroke of lightning on the human body, appears to be an intense shock to the nervous system, often causing immediate death from failure in the heart's power; or collapse, which if recovered from, generally passes on into severe excitement.

The treatment required is merely stimulants, combined with sedatives; when the pulse begins to rise, reaction must be prevented from being too severe: bleeding may sometimes be necessary.

METEOROLOGICAL OBSERVATIONS *made at the Madras Observatory, during the month of October,* 1860.

	Barometer reduced to 32° Faht.		Thermometer corrected to the Kew Observatory's Standard.				Direction of the Wind.		Depth of	
	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	Maxm.	Minim.	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	Rain.	Evaporation.
	Ins.	Ins.	°	°	°	°			Ins.	Ins.
1st Mon..	29·818	29·684	87·2	86·3	95·5	79·2	S. W.	S. by W.	0·842	0·244
2nd Tues.	·833	·731	88·2	87·6	91·8	77·9	W.N.W.	S. by W.	.....	·233
3rd Wed..	·884	·727	87·6	88·4	91·3	80·0	W. by S.	S. by E.	.....	·268
4th Thurs.	·908	·783	87·6	88·7	90·4	77·7	W.N.W.	S. by E.	.....	·304
5th Fri....	·943	·800	87·3	87·4	89·4	78·1	S. W.	S.	.....	·349
6th Sat....	·956	·819	86·3	86·9	90·5	78·1	S. W.	S. by E.	.....	·298
7th Sun...	·975	·860	86·9	88·3	88·7	79·1	W.	W.	.....	·323
8th Mon..	·972	·855	87·8	80·7	91·4	78·2	W.	N. E.	·050	·184
9th Tues..	·940	·778	84·1	86·6	89·0	76·2	S. S. E.	E. S. E.	.....	·270
10th Wed..	·864	·753	85·3	87·1	88·5	75·1	E.	S. S. E.	·003	·328
11th Thurs.	·872	·751	86·5	86·9	88·6	77·2	S. by E.	S. S. E.	·798	*·300
12th Fri....	·919	·800	83.1	84·7	86·0	75·3	E. by N.	S. E.	·280	·271
13th Sat....	·936	·806	85·3	86·0	87·3	77·5	E. S. E.	S. E.	.....	·286
14th Sun..	·927	·786	82·2	83·3	87·0	77·3	N. E·	E.	·590	*·165
15th Mon..	·884	·764	85·3	85.2	86·7	76·7	E.	E. S. E.	·594	·215
16th Tues..	·896	·778	81·4	84·4	86·5	77·0	S. E.	S. by E.	·508	·158
17th Wed..	·889	·787	83·8	83·3	86·6	77·1	E.	S. E.	·370	*·145
18th Thurs.	·919	·793	83·5	86·5	87·8	76·1	N.	S.E. by S.	·663	*·141
19th Fri....	·930	·819	76·5	83·1	84·3	84·1	N. by W.	N.	1·914	*·073
20th Sat....	·904	·795	76·8	78·4	79·3	75·3	N. E.	N. N. E.	1·593	Covd.
21st Sun...	·866	·787	73·7	75·3	75·7	73·5	N. N. E.	N. N. E.	2·890	do.
22nd Mon..	·841	·727	76·3	73·1	76·8	73·3	N. N. E.	E. N. E.	3·488	do.
23rd Tues..	·879	·742	78·4	82·0	83·2	71·4	N. by E.	N. E.	0·295	*·204
24th Wed..	·878	·760	81·5	82·7	84·7	76·0	N. E.	N. N. E	·030	*·155
25th Thurs.	·912	·775	82·5	83·9	86·6	76·4	N. E.	S. S. E.	.....	·222
26th Fri....	·915	·779	83·3	84·8	87·1	77·1	N. E.	N. E.	.....	·236
27th Sat....	·879	·767	83·5	85·3	86·8	75·8	N. E.	N. E.	.....	·241
28th Sun...	·886	·773	82·9	86 2	86·5	74·0	N. E.	N. E.	.....	·325
29th Mon..	·893	·784	84·2	86·2	88.3	73·0	W, S.W.	S.	.....	·335
30th Tues..	·899	·791	84·7	84·7	89·1	76·5	S. W.	S. S. W.	.....	·216
31st Wed..	·932	·808	83·3	86·6	87.9	75·1	W,	N. N. W.	.....	·278

* Evaporation of day only.

METEOROLOGICAL OBSERVATIONS *made at the Madras Observatory, during the month of November,* 1860.

	Barometer reduced to 32° Faht.		Thermometer corrected to the Kew Observatory's Standard.				Direction of the Wind.		Depth of	
	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	Maxm.	Minim.	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	Rain.	Evaporation.
	Ins.	Ins.	°	°	°	°			Ins.	Ins.
1st Thurs.	29·932	29·807	82·3	83·7	86·2	71·4	N.	N. E.	.....	0·296
2nd Fri...	·919	·788	79·9	83·5	85·4	68·4	N.	E. N. E.	.....	·328
3rd Sat....	·935	·820	81·3	82·7	84·5	71·1	N.	N. N. E.	.....	·308
4th Sun...	·941	·862	82·9	83·8	85·3	70·0	N. E.	N.	.....	·323
5th Mon..	·963	·864	81·4	82·6	84·3	70·6	N.	N. N. E.	.....	·303
6th Tues..	·956	·836	81·8	81·0	83·1	72·4	N.	N. by E.	.....	·303
7th Wed..	·957	·847	80·4	82·6	84·4	71·5	N.	N.	.....	·362
8th Thurs.	·994	·873	79·8	83·6	84·0	69·7	N. by W.	N. by W.	.....	·348
9th Fri....	30·011	·876	82·1	85·3	86·0	68·1	N.	N.	.....	·361
10th Sat....	·009	·892	82·8	83·3	85·7	66·6	N. by W.	N. E.	.....	·340
11th Sun...	·033	·910	81·7	82·3	82·5	70·4	N.	N. E.	.....	·363
12th Mon..	·010	·902	82·7	82·6	84·9	71·7	N.	N. N. E.	.....	·365
13th Tues..	·004	·888	81·8	83·0	84·7	72·7	N. by W.	N. E.	.....	·264
14th Wed.	29·982	·851	81·4	81·5	84·6	75·4	N.	N. E.	.....	·329
15th Thurs.	·937	·809	79·1	80·3	82·2	73·8	N. E.	N.	.....	·239
16th Fri....	·909	·807	76·6	80·5	82·8	66·9	N.	N.	.....	·254
17th Sat....	·923	·804	76·5	84·4	84·8	63·5	W.	W. by N.	.....	·269
18th Sun...	·897	·789	78·9	86·5	86·8	66·2	W.	N.	.....	·336
19th Mon...	·903	·789	80·3	84·4	87·0	69·1	W by S.	E.	.....	·267
20th Tues..	·972	·853	81·3	84·0	86·8	71·1	N. W.	E. N. E.	.....	·300
21st Wed..	30·004	·884	80·5	82·3	84·9	72·4	N.	N. E.	.....	·257
22nd Thurs	·004	·875	81·8	82·4	86·2	72·7	N.	N. by E.	0·210	·263
23rd Fri....	·019	·926	82·3	78·9	83·9	74·0	E.	N. E.	·121	·204
24th Sat....	·062	·963	81·3	82·6	84·0	73·0	N. E.	E. N. E.	.....	·253
25th Sun...	·075	·948	81·3	81·8	83·9	73·4	E. N. E.	E.	.....	·235
26th Mon..	·063	·963	79·8	81·1	82·7	71·7	E.	N. E.	.....	·254
27th Tues..	·091	·980	81·6	81·2	82·5	73·3	E.	E. N. E.	.....	·317
28th Wed..	·086	·975	82·1	81·0	83·5	77·0	E.	N. by E.	.....	·436
29th Thurs.	·059	·946	80·3	81·0	82·5	71·7	E.	N. E.	·215	·244
30th Fri....	·015	·911	78·5	76·5	80·5	73·6	N.	N. E.	·671	·023

METEOROLOGICAL OBSERVATIONS *made at the Madras Observatory, during the month of December,* 1860.

	Barometer reduced to 32° Faht.		Thermometer corrected to the Kew Observatory's Standard.				Direction of the Wind.		Depth of	
	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	A.M. *h.m.* 9·41	P.M. *h.m.* 3·41	Maxm.	Minim	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	Rain	Evaporation.
	Ins.	Ins.	°	°	°	°			Ins.	Ins.
1st Sat.	30·014	29·900	80·3	79·7	82·6	74·1	E.	N. E.	.....	0·144
2nd Sun.	29·991	·889	78·3	80·3	80·7	70·6	N. by E.	N. E.	.....	·121
3rd Mon.	·978	·876	79·2	79·2	81·7	69·6	N. W.	N. E.	.....	·289
4th Tues.	·994	·880	80·1	80·6	81·8	71·2	N. E.	N.E.by N	.....	·286
5th Wed.	·991	·890	80·3	80·3	82·0	71·4	N. N. E.	N. N. E.	0·018	·310
6th Thurs.	·966	·834	78·4	79·3	81·3	69·5	N.	N. N. E.	·112	·267
7th Fri.	·920	·807	81·3	79·9	81·7	73·7	N.	E. N. E.	·041	·164
8th Sat.	·954	·857	81·1	80·5	82·5	74·2	N. E.	N. E.	·025	* ·174
9th Sun.	·002	·911	81·9	81·3	82·7	75·1	E.	E. N. E.	.....	·327
10th Mon.	30·021	·915	80·2	80·1	81·5	75·9	N. N. E.	N. E.	.....	·316
11th Tues.	·036	·938	80·1	79·4	82·0	71·6	N. E.	N. E.	.....	·309
12th Wed.	·032	·901	79·5	79·3	81·4	69·2	N.	N. by E.	.....	·248
13th Thurs.	29·994	·886	79·1	78·5	81·8	70·4	N. N. E.	N. by E.	.....	·298
14th Fri.	30·000	·885	79·0	80·4	81·4	70·0	N. by E.	N. N. E.	.....	·245
15th Sat.	·032	·945	77·1	79·3	80·8	70·5	N. by E.	N. N. E.	.....	·231
16th Sun.	·062	·945	79·5	78·8	81·8	72·2	E. N. E.	E. N. E.	.....	·287
17th Mon.	·045	·902	78·3	78·9	80·7	75·1	N. E.	N. E.	.....	·385
18th Tues.	·025	·893	80·5	79·7	81·3	70·2	E. N. E.	N. E.	.....	*·314
19th Wed.	·042	·922	79·1	79·3	81·0	75·4	N. N. E.	N. E.	.....	·396
20th Thurs.	·066	·978	79·8	80·6	82·0	73·1	N. E.	E. N. E.	.....	·326
21st Fri.	0·75	·978	·785	79·7	81·2	70·1	N. E.	E.	.....	·256
22nd Sat.	·089	·960	79·3	79·3	81·4	69·5	N. E.	E. N. E.	.....	·311
23rd Sun.	·066	·967	77·7	79·0	79·2	68·6	N. N. E.	N.	.....	·359
24th Mon.	·088	·982	78·0	78·1	80·7	69·2	N. N. E.	E. N. E.	.....	·395
25th Tues.	·083	·963	77·2	78·9	80·8	69·3	N. N. E.	E.	·032	·307
26th Wed.	·074	·972	79·4	79·1	80·7	71·9	E.	E.	.....	·270
27th Thurs.	·075	·971	78·1	78·3	80·2	68·3	N.	E. N. E.	.....	·312
28th Fri.	·054	·963	78·5	79·5	80·9	68·1	N.	N. E.	.....	·292
29th Sat.	·073	·978	78·8	79·3	81·0	70·2	E.	N.E.byE	.....	·283
30th Sun.	·123	30·015	79·2	79·3	79·4	70·2	E.	E. by N.	.....	·269
31st Mon.	·139	·038	79·0	78·2	80·6	75·0	E.	E.	.....	·299

* Evaporation of day only.

PART IV.

MEDICAL INTELLIGENCE.

MEMORIAL OF THE MEDICAL OFFICERS OF H. M.'S BOMBAY MEDICAL SERVICE.

We re-publish the Memorial of the Medical Officers of the Bombay Presidency, for the information of our readers. It is on the whole a carefully drawn up document, but we cannot accord to it our unqualified approval. What the Indian Medical Service requires, is a complete assimilation with that of Her Majesty's British Army, as to rank, furlough, pay, pensions, &c. There should be but one warrant for both services, and nothing will satisfy those gentlemen who have been unjustly superseded by the Warrant of 1st October 1858, but the ante-dating of the Indian Medical Warrant of 13th January 1860, to the former date, and making it in all respects similar. Until this is done the Indian Medical Service will have just cause for complaint.

Memorial of the Medical Officers of H. M.'s Bombay Medical Service.

To His Excellency the Right Honourable
Sir Charles Wood, *Secretary of State for India.*

Most Respectfully Sheweth,

1. That, on the 1st October 1858, a Royal Warrant was issued improving the general position and status of the Medical Officers of Her Majesty's British Army, and on the 13th January 1860, another Royal Warrant was issued for the Medical Officers of Her Majesty's Indian Army, with a view to assimilate the two Services, and place them "on precisely the same footing" as stated in the letter which accompanied the latter Warrant.

2. That the Medical Officers of Her Majesty's British Army, however, enjoy many advantages and privileges under the Warrant of 1st October 1858, which do not appear to have been taken into consideration in framing the Warrant of 13th January 1860, for Medical Officers of Her Majesty's Indian Army, which your Memorialists beg respectfully to enumerate under the following heads :—

1*st.*—Relative Rank and Period of Service.
2*nd.*—Effective Pay and Allowances.
3*rd.*—Furlough Pay.
4*th.*—Pensions after fixed periods of Service.
5*th.*—Superannuated Pensions.
6*th.*—"Good Service" Pensions.
7*th.*—Benefits to Families.

I.—Relative Rank and Period of Service.

3. That commencing with the highest grade of Medical Officers in Her Majesty's Indian Army, the relative rank of the Officer formerly designated Director-General, but now Principal Inspector-General at each Presidency, is only equivalent to that of Inspector-General in Her Majesty's British Army, who, if of a prior date of Commission, will take precedence of, and supersede, the Principal Inspector-General—a degradation to which as "Director-General" he would not have been liable previous to the publication of the above-mentioned Warrant.

4. That with reference to the grades of Inspector-General and Deputy Inspectors-General a very marked distinction has been made between the two Services in using the word "Commission" in the 16th paragraph of the Warrant of 1st October 1858, whilst "Appointment" is substituted in the corresponding paragraph 9 of the Warrant of 13th January 1860, as if these grades in Her Majesty's Indian Army were to be regarded as only temporary Staff Appointments, to which no Commission is intended to be attached, while in Her Majesty's British Army a Commission has always been granted to each of these grades.

5. That from the manner in which the date of their rank as Surgeon-Major has been assigned to the Senior Medical Officers of Her Majesty's Indian Army, many of them have been superseded by Officers ten and twelve years junior to them in Her Majesty's British Army.

6. That if the term "*Service in India*" used throughout the Warrant of 13th January 1860 is intended to be restricted solely to actual residence in India, it not only will have the effect of causing the order of seniority to be upset among the Members of the Indian Medical Service themselves, from a junior frequently arriving in India and commencing service before his senior on the list, but it will also have the effect of causing those who have had the misfortune to lose their health in India, and to seek a change of climate to Europe, to be superseded by their juniors who have not found it necessary to seek this change,—an anomaly unheard of in any other branch of the public service.

7. That if the term "*Service in India*" is restricted to actual residence, exclusive of all leaves to Europe or elsewhere beyond sea, the Medical Officers of Her Majesty's Indian Army will be placed at a great disadvantage, and will necessarily be superseded by the Medical Officers of Her Majesty's British Army, who are allowed to include all leaves of absence in their period of Service qualifying for the rank of Surgeon-Major, for increased relative rank, and for their pensions on retirement.

II.—Pay and Allowances.

8. That the Medical Officers of Her Majesty's British Army are now placed in point of pecuniary remuneration according to

their relative ranks, in a far superior position to Military Officers, as shown in the following table of the Daily Pay of both Medical and Military Officers of Her Majesty's British Army.

Pay Table of Her Majesty's British Army.

Military Ranks and corresponding Medical Ranks H. M.'s British Army.	Daily Pay of Medical Officers H. M.'s British Army.	Daily Pay of Military Officers H. M.'s British Army.
Major General ..... and Inspector-General of Hospitals after 3 years' Service	..... After 30 years £2 5 0 Do. 25 „ £2 0 0	£1 5 0
Colonel ..... and Deputy Inspector-General after 5 years' Service	..... After 30 years £1 14 0 Do. 25 „ £1 10 0	£1 5 0
Lieutenant Colonel ..... and Surgeons-Major.....	..... After 25 years £1 15 0 Do. 20 „ £1 12 0	£1 0 0
Major ..... and Surgeon	..... After 15 years £0 18 0	£0 16 0
Captain ..... and Assistant Surgeon after 6 years' Service.	..... £0 13 0	£0 11 6
Lieutenant ..... and Assistant Surgeon	..... £0 10 0	£0 7 6

9. That, whilst the Medical Officers of Her Majesty's British Army are thus placed in a superior position relatively to Military Officers, the Medical Officers of Her Majesty's Indian Army are placed in point of pecuniary remuneration, according to their relative ranks in a very inferior position to Military Officers of the same

rank in Her Majesty's Indian Army, as shown in the following table of the Monthly Pay of Medical and Military Officers of the Indian Army.

Pay Table of Her Majesty's Indian Army.

Military Ranks and corresponding Medical Ranks H. M.'s Indian Army.	Monthly Pay of Medical Officers H. M.'s Indian Army.	Monthly Pay of Military Officers H. M.'s Indian Army.
Lieutenant Colonel..... and Surgeons-Major	..... Rupees 374 1 0	Rupees 827 14 0
Major ..... and Surgeon	..... Rupees 374 1 0	Rupees 640 14 6
Captain ..... and Assistant Surgeon after 6 years' Service.....	..... Rupees 225 12 0	Rupees 374 1 0
Lieutenant ..... and Assistant Surgeon	..... Rupees 225 12 0	Rupees 225 12 0

The above are the half batta rates of pay exclusive of field and all other allowances.

10. That as shown in the above Table a Surgeon-Major or Surgeon holding respectively the relative ranks of Lieutenant-Colonel and of Major, draw only the same rate of pay as a Captain, and all Assistant-Surgeons, many of whom are of 17 and 18 years' service, and who hold the relative rank of Captain from the date of their completing 6 years' service, draw only the same rate of pay as a Lieutenant, although the Royal Warrant expressly declares that the relative rank of Medical Officers "shall carry with it all precedence and advantages attaching to the rank with which it corresponds."

III.—Furlough Pay.

11. That the disparity between the Furlough Pay of Medical Officers of Her Majesty's British and Indian Armies is apparent from the following table, which also shows the disparity between the Furlough Pay of Medical Officers of Her Majesty's Indian

Army and Military Officers of the same ranks in both Her Majesty's and British Indian Armies.

Furlough Pay Table in both Services.

Military Ranks and corresponding Medical Ranks in both Services.	Furlough Pay of Medical Officers Her Majesty's British Army.	Furlough Pay of Medical Officers Her Majesty's Indian Army.	Furlough Pay of Military Officers of both Her Majesty's British & Indian Armies.
Major-General..... and Inspector-General of Hospital after 3 years' service.. ...	..... £ 2 5 0	..... £ 1 5 0	£ 1 5 0
Colonel..... and Deputy Inspector-General after 3 years' service. ...	..... £ 1 14 0	..... £ 1 0 0	£ 1 5 0
Lieutenant-Colonel ... and Surgeons-Major.	..... £ 1 5 0	..... £ 0 10 6	£ 1 0 0
Major..... and Surgeon	..... £ 0 18 0	..... £ 0 10 6	£ 0 16 0
Captain..... and Assist.-Surgeon after 6 years' service...	..... £ 0 13 0	..... £ 0 6 6	£ 0 10 6
Lieutenant ..... and Assistant-Surgeon ...	..... £ 0 10 0	..... £ 0 6 6	£ 0 6 6

(Under the New Rules the pay of those absent on sick certificate is the same for both Services for the first six months; but the disparity of their Furlough Pay is as stated in the above table.)

12. That, from the above table, it is apparent that a Surgeon-Major in Her Majesty's British Army draws a Furlough Pay of £1 5*s.* per diem, and a Surgeon-Major in Her Majesty's Indian Army only 10*s.* 6*d.* per diem, and a Military Officer, holding the corresponding rank of Lieutenant-Colonel in both Her Majesty's

British and Indian Armies, draws £1 per diem, the disparity being equally remarkable in the other ranks.

IV.—Retired Pensions.

13. That the retired pensions of Medical Officers of Her Majesty's British Army, are greatly superior to those of H. M.'s Indian Army and that their pensions are regulated according to rank—a privilege denied to the Medical Officers of Her Majesty's Indian Army, but enjoyed by every other branch and department of Her Majesty's Indian and British Forces, Naval as well as Military, except the Indian Medical Department.

14. That the injustice of this distinction, in depriving Medical Officers of Her Majesty's Indian Army of the privilege of pensions according to their rank, is apparent from the fact, that a Military Officer of the rank of Major or Lieutenant-Colonel can retire on the full pay of these ranks after only 22 years' service, whilst a Medical Officer has to serve 25 years for the equivalent of a Major's pension, and 29 years for that of a Lieutenant-Colonel.

15. That, notwithstanding that Medical Officers of Her Majesty's Indian Army are thus deprived of the privilege of retired pensions according to rank, the scale of their pensions by length of service is actually less favorable than that assigned to Military Officers, inasmuch as a Military Officer can retire on the pension of a Major (£292) four years after being entitled to that of Captain (£191), and on the pension of a Lieutenant Colonel (£365) four years after that of a Major; whilst a Medical Officer has to serve eight years after being entitled to the pension of a Captain (£191) before he can retire on the equivalent of a Major's pension (£300) instead of four, and twelve years before he can retire on the pension of a Lieutenant-Colonel (£365) instead of eight, as may be seen by the following table :—

Medical Pension by length of Service only.			Military Pension by length of Service and according to Rank after 22 years' service.			
After 17	years	£ 191	After 20	years	£ 191	Captain's pension.
„ 21	„	250	„ 24	„	292	Major's do.
„ 25	„	300	„ 28	„	365	Lieut.-Col's do.
„ 29	„	365	„ 32	„	456	Colonel's do.
„ 32	„	500	Retired allowance of a Regimental Colonel.		£1,056.	
„ 35	„	700				

16. That, taking into consideration the more advanced age at which Medical Officers enter the Service, and their expensive professional education, a very marked inequality exists in the scale of their retired pensions, in requiring them to serve one year longer for the equivalent of a Major's pension, and one year longer for the pension of a Lieutenant-Colonel than Military Officers, whilst

the same scale of pensions commences by allowing Medical Officers the pension of a Captain after *three years less service* than Military Officers in consideration of their more advanced age,—the result being that, calculated from the average age at which they enter the Service, Miliary Officers are entitled to the pension of Major at 42, and of Lieutenant-Colonel at 46 years of age, whilst a Medical Officer does not become entitled to the corresponding rates of pension until 50 and 54 years of age.

17. That the only justification offered for this disparity in the rates of Military and Medical pensions is that the Medical Service has a Retiring Fund supported by Government, whilst the Military Service possess no such advantage, but your Memorialists beg most respectfully to point out that in reality the Military Service does possess a much superior advantage in their purchase system co-existing with the privilege of pensions by rank, whereas in consequence of the Medical Service being deprived of this privilege, their purchase system, formerly existing, has now become an impossibility, and the only support given by Government to their Retiring Fund, viz., 6 per cent. on the subscriptions of its members, is in no way equivalent to the difference in the rates of Military and Medical pensions.

18. That, so far from the Medical Retiring Fund being a boon it is an absolute pecuniary loss to your Memorialists, who are compelled by covenant to subscribe to it at a rate 50 per cent. higher than any future benefit they can ever receive from it; their compulsory connection with a Fund so constituted is devoid of all equity, and they deem it a grievous injustice that its existence on such a basis should be assigned as a reason for withholding from them the same scale of pensions as Military Officers.

19. That the following table shows the rates of pension upon which Medical Officers of Her Majesty's British Army have a right to retire after 25 years' service, ten of which have been passed in the Colonies, and the whole of it, in many cases, in a European climate, contrasted with the pensions to Medical Officers of Her Majesty's Indian Army *after the same period in the tropics*, the difference in favour of Her Majesty's British Service being very remarkable.

Pensions after 25 years' service contrasted in both Services.

	Her Majesty's British Army.	Her Majesty's Indian Army.	Difference in favor of Her Majesty' British Army.
Inspectors-General ...	£ 574 17 6	£ 300 0 0	£ 274 17 6
Deputy Inspectors-General	£ 383 5 0	£ 300 0 0	£ 83 5 0
Surgeons-Major	£ 319 7 6	£ 300 0 0	£ 19 7 6

V.—Superannuated Pensions.

20. That the Medical Officers of Her Majesty's British Army are entitled, under the terms of the Royal Warrant of 1st October 1858, to the following pensions if incapacitated for further service by ill-health or wounds or if superannuated as Assistant-Surgeons, Surgeons, or Surgeons-Major, after 55 years of age, or as Deputy Inspectors-General or Inspectors-General after 65 years of age.

	After 30 years.	After 25 years.	After 20 years.	After 15 years.	After 10 years.	After 5 years.	5 years.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Inspector-General..	684 7 6	611 7 6	546 10 0	....	....	....	....
Deputy Inspectors-General	465 7 6	410 12 6	383 5 0	....	....	....	....
Surgeons-Major....	....	337 12 6	301 2 6	....	....	....	....
Surgeon	....	....	....	246 7 6	200 0 0	....	....
Assistant-Surgeon ..	....	....	....	....	182 0 0	146 0 0	109 9

21. That no provision of any kind has been made for Medical Officers of her Majesty's Indian Army superannuated after 55 and 65 years of age, under the terms of the Royal Warrant of 13th January 1860. And the only provision for those whose ill state of health renders it impossible for them to continue to serve in India is the half pay as their ranks under the old Retiring Regulations, viz. :—

Surgeons the half pay of Captain ..... £ 127 15 0 per annum.
Asst.-Surgeons the half pay of Lieut. £ 73 0 0 ditto.

22. That, in addition to the injustice which the Medical Officers of Her Majesty's Indian Army have already experienced in being deprived of the privilege of retired pensions according to rank, and having a scale of pensions assigned to them by length of service inferior to that previously assigned to Military Officers, a further very serious injustice has been done them in fixing a superannuation age, after which retirement from the Service is made compulsory, as they are thereby deprived of the possibility of ever attaining the superior pensions by length of service.

VI.—Good Service Pensions.

23. That a very great injustice and an invidious distinction has also been made in excluding the Medical Officers of Her Majesty's Indian Army from the benefits of the "Good Service" Pensions granted to Medical Officers of Her Majesty's British Army in paragraph 25 of the Royal Warrant of 1st October 1858.

VII.—Benefits to Families.

24. That as the benefits to the families of Medical Officers are regulated according to the rank in which they subscribe to the Military Funds, and as Medical Officers' subscriptions are regulated according to the rate of pay which they receive, their families are consequently deprived of the benefits enjoyed by the families of combatant Officers holding the same relative ranks so long as

Medical Officers are deprived of the pay of the relative ranks assigned to them by the Royal Warrant of 13th January 1860.

25. That, in the augmentations which have at various periods been made in the Medical Department of the different Presidencies, a due proportion has not been maintained between the number of Surgeons and Assistant-Surgeons, their numbers in each Presidency being—

			Proportion of Asst. Surgeons to Surgeons.
Bengal.....	Surgeons.....	140	2·07
	Assistant-Surgeons.....	290	
Madras.....	Surgeons.....	76	2·19
	Assistant-Surgeons.....	167	
Bombay.....	Surgeons.....	55	2·72
	Assistant-Surgeons.....	150	

26. That much dissatisfaction and discontent prevails among the members of the Indian Medical Services, in consequence of the check given to promotion and early retirement, by the changes made in the scale of their retiring pensions, and from the other causes specified in this Memorial. The unpopularity of the Service in England being apparent from the fact, that there have always been fewer candidates than vacancies for Indian Assistant-Surgeoncies since the introduction of the competitive system,—the deficiency of Medical Officers being so great that the Bombay Government have lately had to advertise in the *Government Gazette* for the services of qualified medical men of the Indian Navy.

WHEREFORE your Memorialists earnestly request that the grievances now complained of may be removed, and in order to give effect to what, with all deference, they humbly conceive to have been the evident meaning and intention of the Royal Warrant of 13th January 1860, to place the two Services on a footing of equality, they most respectfully pray,—

1*st.*—That all distinctions may be done away with, in the Designation, Relative Rank, manner of counting Period of Service, as well as between the "Commission" or "Appointment" of all grades of Medical Officers in both Services.

2*nd.*—That Medical Officers of Her Majesty's Indian Army may be allowed to draw the same rate of pay as Military Officers holding the corresponding ranks assigned to Medical Officers in the Royal Warrant of 13th January 1860, viz. :—

Assist.-Surgeons after 6 years' service. The pay of Captains,
Surgeons ..... The pay of Majors,
Surgeons-Major..... The pay of Lieut. Colonels,

and the same rate of Furlough Pay as Medical Officers of Her Majesty's British Army.

3*rd.*—That Medical Officers of Her Majesty's Indian Army may be allowed the same advantages as are now enjoyed by Military Officers of Her Majesty's Indian Army, of retiring on the pension of

Major four years after being entitled to that of Captain, and on the pension of Lieutenant-Colonel four years after that of Major, and on the pension of Colonel four years after that of Lieutenant-Colonel, and that pensions, according to rank, may be assigned to the superior grades of Deputy Inspector-General and Inspectors-General of Hospitals according to the following scale, which your Memorialists respectfully beg to submit for consideration, so as to give Medical Officers of Her Majesty's Indian Army the same advantages of pensions according to rank as are now enjoyed by Military Officers of Her Majesty's Indian Army and by Medical Officers of Her Majesty's British Army :—

	Surgeons and Surgeons-Major.	Deputy Inspectors-General of Hospitals.	Inspectors-General of Hospitals.
After 17 years.....	£ 191 12 6		
„ 21 „	292 0 0		
„ 25 „	365 0 0	£ 383 5 0	£ 574 17 6
„ 29 „	456 0 0	474 10 0	574 17 6

4th.—That all Medical Officers of Her Majesty's Indian Army who become incapacitated for further service by ill-health or wounds, or who are superannuated after 55 or 65 years of age, may be allowed the same rates of pension as have been assigned under similar circumstances to Medical Officers of Her Majesty's British Army, and that they may likewise be permitted to participate in the benefits of the "Good Service" Pensions also assigned to Medical Officers of Her Majesty's British Army under the Royal Warrant of 1st October 1858.

5th.—That a more definite proportion may be maintained between the number of Surgeons and Assistant Surgeons at each Presidency than that at present existing.

And your Memorialists will ever pray, &c., &c.

THE HISTORY OF LEPROSY.

We gladly introduce into our columns the following "appeal" by Professor Virchow to the medical profession in all parts of the world.

Many of our readers have ample opportunities of acquainting themselves with the history of leprosy, so far as India is concerned, and we venture to express a hope that their experience may be communicated to the learned professor, who is now engaged in accumulating materials for a complete historical account of the disease. We shall be

happy to take charge of and forward any communications on the subject, or the same may be sent in an official form to the Principal Inspector General of the Medical Department.

Appeal on behalf of the History of Leprosy. By Professor Rud. Virchow of Berlin.

"It is now several months since I appealed to physicians, historians and travellers to assist me in composing a history of leprosy *(Lepra Arabum, Elephantiasis Græcorum)*, and I must gratefully acknowledge having received very abundant contributions from many quarters. I have already published a portion of those observations which have especial reference to leprosy in Germany, in the 18th volume of my Archives for Pathological Anatomy and Physiology, and for Clinical Medicine ; other communications are in the press and will appear in the 19th volume of the Archives. Many other facts which relate to foreign countries, and to questions specially of medical, geographical, linguistic or civilizational interest, I must put aside for the present, on account of their too great bulk.

"Meanwhile, however, I cannot dispense with the continual assistance of other investigators, and since a personal correspondence cannot be carried on with unknown friends, I once more choose the way of publicity. If there is still any occasion to refer to the great importance of the subject, a glance at the excellent monograph, which Dr. Aug. Hirsch has published concerning leprosy in the second part, which has just appeared, of his Manual of Historico-geographical Pathology, will speedily bring conviction to the mind of everybody. A malady, which once pervaded the whole world, which even now attacks thousands in every quarter of the globe, and to the ravages of which the most ancient historical records bear witness, is certainly worthy of the most zealous study.

"I will now, first of all, beg leave to repeat the questions which I have already published :—

A. Lazarettos (Leper-hospitals).

1. Do you know where there are any lazarettos still to be found ? How old are they ? How many patients do they receive ? What are the regulations with respect to admission, and what is the plan followed in the administration of these establishments ?
2. What places formerly possessed lazarettos ? When were they found ? How large were they ? What were their statutes ? When were they turned to some other purpose, or suppressed ?

B. Leprosy.

1. Where does leprosy *(Lepra Arabum, Elephantiasis Græcorum, Spedalskhed)* occur ?

2. Where did leprosy prevail? and when was it first, and when last, mentioned?
3. What forms of leprosy have been observed? *(Lepra tuberculosa, anæsthetica, mutilans, articulorum? Morphœa?)* Are any definite relations known to exist between Morphæa and the other forms of lepra?
4. Does the disease occur endemically or sporadically? Is an increase or a decrease in the number of cases observed?
5. To what causes is the disease attributed?
   (a) Inheritance?
   (b) Contagion?
   (c) Climate? (humidity of atmosphere and soil?)
   (d) Food? (Fat? Fish? Salted, or what kind of fish?)
6. Is there any known treatment for leprosy?
7. Are there any peculiar laws affecting lepers? Solitary confinement? Prohibition of marriage?
8. Are there any literary, private or official reports concerning the disease?

"In continuation, I would remark that there still remain several large gaps in the history of leprosy in Germany, that from Austria in particular scarcely any details have as yet been obtained with regard to the state of the lazarettos, and that with respect to what occurs in Westphalia, Hesse, Hanover, Oldenburg, Holstein and Eastern Prussia next to nothing is at present known. Is it not allowable to expect that in these countries also sufficient interest will be taken in a matter, which can only be settled by the co-operation of many, to enable us to obtain at least an approximate idea of the real state of things?"

"The foundation of lazarettos (leper-hospitals) was essentially an ecclesiastical affair. It rested also in a great measure with the clergy whether lepers were admitted into these establishments and separated from the rest of the community. But to what extent this was their exclusive right, and especially what was the case in Germany, is still involved in great obscurity. For most authors have, by an illogical juxtaposition of what was separated by centuries and many countries, thrown the whole matter into confusion. With regard to Germany in particular it would be desirable that it should be accurately ascertained, whether the same ceremonial and the same religious ideas which obtained in France, for example, prevailed also amongst us. This might perhaps be determined in places, where there was a great concentration of ecclesiastical authority, as for example in Mayence, Cologne, and Trèves, if the archives, rituals, &c., were consulted. Questions are connected herewith which are of great importance in a civilizational point of view.

"Out of Germany, it is especially with regard to the Sclavonic countries that nearly all historical information is wanting. When, for example, Richter in his History of Medicine in Russia, vol. i. p.

245, relates that leprosy first appeared in Russia in 1426, *i. e.*, at a time when it was already beginning to disappear elsewhere, this is in itself extremely improbable, but at the same time, if true, extremely valuable as regards the history of the disease. Everything therefore which is known with regard to Poland, Russia, Galicia, &c., offers twofold interest, because it at the same involves one of the capital questions concerning the nature of the disease.

"Finally, with regard to the geographical distribution of leprosy at the present time, Hirsch and Mühry have already collected a large number of facts, yet even in this quarter there is still a great deal to be done. With respect to the interior of the continents, and especially Asia and Africa, we have scarcely any information, and even concerning China, where the disease is said to be so general, our knowledge is most superficial. From America too there is extreme difficulty in obtaining even official documents. In all these instances much might be done, not only by the agency of travellers, but also by means of diplomatic and commercial agents, of merchants and physicians. I only hope that every one will rest assured that any contributions, however small, will prove acceptable."

BERLIN, *April* 19, 1860.

THE INDIAN ANNALS OF MEDICAL SCIENCE.

From the following editorial notice in the thirteenth number of this periodical, (received too late for review) we infer that local medical literature meets but with poor encouragement and support in the Bengal Presidency. We may briefly remark that it will be a lasting shame and disgrace to those concerned, if the "Indian Annals" should, after a most useful career of seven years duration, be permitted to become extinct. We have only had one fault to find with our contemporary—a fault which he acknowledges, and apologises for—that of irregularity of appearance, and this fault, with the recent addition to the Editorial staff, we may reasonably hope will no longer exist. We trust that the present statement of facts, will have the effect of augmenting the subscription list, and prolonging the existence of a most meritorious publication.

"The Editors of the "Indian Annals of Medical Science" take this opportunity of addressing a few words, regarding their Journal and Themselves, to their Subscribers and to the Profession at large, in India.

"The two medical men, who still conduct the "Indian Annals," commenced their labours in October 1853, in a spirit which has actuated them up to the present moment. They considerd that the

publication of a series of Medical Transactions, in Calcutta, would redound, equally, to the advancement of Science and to the credit of their Professional Brethren throughout the Bengal Presidency. Their own proper duties, as servants of the State, were, then, and have always continued to be very laborious and responsible ; and it has only too frequently occurred that the task of editing the "Annals," —the constant and full occupation of their few leisure hours,—has, of necessity, been put aside and deferred, when the pressure of duty, especially during the late troubles, allowed no rest to the over-tasked brains and the weary hands.

They have never, but twice, sought editorial assistance. First, when, for an only too brief period, their lamented friend Joseph Richard Bedford threw his best talents and energies into the work; and, now, that they have deemed it wise and safe to infuse new life and vigour into their undertaking, by selecting, as their colleague and probable successor, a physician,—(the senior editors may be permitted to say,) of the highest ability, younger than themselves, with the prospect of a long and eminent Indian career before him.

In commencing their undertaking, the Editors sought no remuneration for their labours, and they have received none ; they were willing to devote time and even money to the success of the Journal —they have done both. They have now entered upon the eighth year of their labours ; their thirteenth number has left the press, and they have incurred a debt (certainly not a very heavy one) to their Publishers.

They believe that only one cause of discontent has ever arisen between their Contributors and Subscribers and Themselves ;—*viz.*, their thirteen numbers have not appeared with strict periodical regularity. On this point, they observe that the fact has caused them deep regret, but that they are not and never can be, in India, masters of their own time ; and that they have, in bringing out this work, served their Professional Brethren gratuitously, and are still willing and anxious to do so,—if duly supported.

They regret to say that the Profession at large, in this country,— and in Bengal especially,—do not support their undertaking ; which, nevertheless, shall not fall to the ground yet. Another number, the Fourteenth, shall appear, if they are spared, to complete their Seventh Volume ; when, providing their Subscription List shall not have been considerably augmented, they must abandon their labours, with deep disappointment and with no reward, except the consciousness of having faithfully, according to their ability, performed a Good Work,—most generously patronised by the Government, warmly appreciated and supported by a few staunch friends,—but unresponded to by the Profession at large.

THE EDINBURGH MEDICAL JOURNAL ON "SANITARY SCIENCE" AND MEDICAL "STATISTICS."

"In connection with the great talk we have heard about "sanitary science;" it is interesting to note what that is when put in the form of precise regulations. It is found to consist in opening windows, in keeping privies clean, in enforcing a circulation of air about beds and bedding, and in attending to drainage, diet, and water supply,—all matters of great importance, much more important than physicking after the manner of English apothecaries, as the world is beginning to find out, involving considerations which are revolutionizing the whole practice of medicine,—but hardly to be put forward as a science. In point of fact, all that is scientific about sanitary matters is to be found in the physiological principles which we were taught at school. The application of them is a matter of method and handicraft, not of science.

"Sanitary science" has been one of the current cants of the last few years; statistics has been another. We have seen in what poor, shrunk proportions the former appears when the big-mouthed talk has to be reduced to practice. Let us see now what is made of the latter. It will hardly be credited that, in one of the forms here given, the reporter is required to specify the exact date, nay, that he is even requested to specify the fragment of the day of the incursion of every disease; that is to say, in the future army records, the very day on which such diseases as phthisis, Bright's disease, &c., &c., first commenced, will be shown for every case. Truly, a remarkable statistical result! It will hardly be credited that, while there was an epidemic of catarrh at some places last winter, every case of that very simple disease will appear as recorded under a different head, because, through some oversight, catarrh has been omitted from the nosomony adopted, and that this *zymotic* disease will be rendered as one of the *local* diseases, bronchitis. It will hardly be credited that, while a pretty, fanciful nosology has been adopted, which is mostly based on the theory of the causation of diseases, there is a separate column in which the reporter is required to specify his own private notion of the cause of each case; being thus given the opportunity of contradicting one section of a line in another. It would be quite useless to go on multiplying such instances as these. When one hears what some people think and say of what they call statistics; when one sees

how eagerly they jump at broad laws from imperfect, confused, inapplicable, and incorrect data; when one sees how eagerly they accept a false premiss, and how they revel in a string of irrelevant conclusions; when one sees people here and there devoting what little intellectual *vis* they may possess to the multiplication of unmeaning "returns," and then calling the miserable result, "statistics," for no other apparent reason than that it is a fashionable word of three syllables;—when one sees all this, one is very apt to be reminded of a passage in the *Guesses at Truth*, which would make a very fitting motto for most so called statistical forms and the use that is made of them. "One of the wonders of the world," said Archdeacon Hare, "is the quantity of idle, purposeless untruth,—the lies which nobody believes, and which every body tells, as it were from the pure love of lying, or as if the bright form and features of truth could not be duly brought out except on a dark ground of falsehood." It is quite awful to think of the mass of crudities and unveracities which are put forward to be treasured as if they were the very final outcome and the oracles of brightest truth. It may be well to protest that those who are made to be guilty of the "idle, purposeless untruth," which is always to be found in imperfect statistics, do sometimes know that they are guilty, and may plead compulsion in bar of judgment.

There was great promise of a reduction of the amount of mere clerical work, but that has been added to enormously, and in some places it seems to have been reduced to a degree of childish, but most provoking absurdity, not so much from these regulations as from local practice. About this there is really no use whatever in complaining. Not only here, but in far greater concerns, the country has been handed over to a set of clerks with souls no larger than that of a scribe; and until the sharp medicine of some terrible calamity comes to purge them away, we need not look for any higher effort than is required for the invention of "returns," and for the subsequent accurate interment of them in pigeon-holes. We are possessed by a legion of war office clerks, and that legion will require the exorcism of some great calamity to drive them out. These gentlemen have lately formed themselves into a regiment of soldiers; and it would be a very good plan, when the catastrophe does come, to treat them as David treated Uriah the Hittite, and to place them in the forefront of the hottest battle. If

the result was the same, the public would have much reason to rejoice."—*Review of Regulations for Medical Officers H. M. Army. Nov.* 1860, *page* 400.

THE CINCHONÆ IN INDIA.

In our October number (page 491, Vol. I.) we alluded to the mission of Mr. Clements Markham in introducing into this country the quinine yielding plants of South America, and promised to keep our readers informed of the progress of the experiment then about to be made.

We regret to learn that the plants brought by Mr. Markham have all perished. They suffered so much from exposure to cold, in his journey across the Corderillas, that very few of them survived the voyage to England, and from thence overland to the Western coast. Cuttings were made by Mr. McIvor from some of the most promising looking plants, and it was hoped that these might be propagated ; but by the latest accounts, we understand that all have perished. A second supply of young plants of the grey and yellow bark, have lately been received, as well as seeds. The plants, it is understood, are in a very unsatisfactory condition, but there is every hope that the supply of seeds will enable Mr. Markham to establish the practicability of growing the cinchonæ in this country. Mr. Markham has recently stated in a letter to the "Madras Times" that a further supply of plants and seeds is expected from the Eucador, and that arrangements have been made with duly qualified agents, to continue sending supplies of both, so long as may be necessary. Attempts will at the same time be made to naturalize the cinchonæ in the Hills of Jamaica, and Ceylon.

It is well known that the Dutch have successfully introduced these valuable plants into Java. They have now upwards of half a million of young trees planted out, chiefly of the Calysaya species, and it has been satisfactorily proved that a higher per-centage of alkaloid is obtainable from the trees grown in Java, than from those which have flourished in their native forests. So jealous, however, are the authorities, of their success in the experiment, that Dr. Macpherson, on a late visit to the island, was prohibited from bringing away with him a single plant or seed. Dr. Macpherson's description of the mode of culture, practised in Java, we shall probably have the pleasure of publishing in our next number.

Postings and Removals of the Commissioned and Warrant Medical Officers of the Madras Establishment, for the Quarter ending 31st December 1860.—(From the Fort St. George Gazette.)

Dates of G. O. G.	Dates of G. O. C. C.	Rank and Names.	From.	To.
1860.	1860.			
2nd Oct.	.....	Assistant Surgeon W. H. Rean, M. D.....	Arrived at Madras on the 25th September 1860 from Europe.	
....	1st Oct.	Vety. Surgeon F. G. Shaw.....	7th Regt. L. C.....	6th Regt. L. C.
.....	do	do J. M. Cullimore.....	6th do	d. d. Horse Brigade Arty
.....	do	do J. M. Cullimore..	Presy. s. c. prepy. to proceeding to Sea and Australia on s. c.	
9th Oct.	.....	Assistant Surgeon D. Mackenzie.....	Europe on s. c. under the old regulations and to embark from Madras.	
do	.....	do D. W. Trimnell.....	Services placed at the disposal of the Govt. of India for appointment as Civil Asst. Surg. Nursingapore.	
.....	2nd Oct.	do J. Fitz Gerald.....	d. d. 1st Bat. Arty. to afford Medl. aid to the details of European troops under orders to proceed to Secunderabad, Jaulnah and Kamptee, viâ Muslipatam, on the Ship "Devonshire" on the 5th instant.	
.....	do	Assistant Apothecary R. H. Legge.....	Department of Depy. Inspt. Genl. of Hosptls. Hyd. Subsy. Force, to do duty with the above details.....	

.....	6th Oct.	Surgeon W. H. S. Burn.....	22nd Regiment Native Infantry...	1st Regt. L. C., but to do duty with the 22nd Regt. N.I., until its arrival at Mangalore.
.....	do	Assistant Surgeon J. H. Blackwell.....	.....	d. d. 49th Regiment N. I.
.....	do	do W. Farquhar, M.D.....	Late Actg. Zillah Surgn. Chingleput.....	In Medical charge of Arty. details, Singapore.
.....	do	do H. R. Handyside.....	.....	d. d. under the Surgn. Major of the 1st Madras Fusiliers.
.....	do	Apothecary G. Smith.....	Of the Garrison of Cannanore, is permitted to proceed to Bangalore and Eastern Coast during the remaining portion of leave of absence on s. c., granted to him in G. O. C. C., dated 6th January 1860.	
.....	9th Oct.	Surgeon C. M. Duff, M.D.....	From date of expiration of privilege leave, granted in G.O.C.C., dated 7th August 1860, for 2 months, Madras.	
.....	do	Apothecary T. Huntley.	d. d. Hospital at Trimulgherry, in continuation from 1st to 31st Oct. 1860, to enable him to join.	
.....	do	Asst. Apothecary H. Hackett.....	Of the Dept. of Depy. Inspt. Genl. of Hospitals Southern Division, from 22nd September 1860, for 2 months, Madras.	
12th Oct.	.....	A. N. Magrath, Esq., F. R. C. S., late Director General, Medical Department...	Europe on s. c. for 15 months, under the Regulations of 1854 and to embark from Madras.	

Dates of G. O. G.	Dates of G. O. C. C.	Rank and Names.	From.	To.
1860.	1860.			
12th Oct.	.....	Vety. Surg. J. M. Cullimore	d. d. Horse Arty. is permitted to proceed to the Cape of Good Hope and Australia on s. c. for 18 months, under the old regulations and to embark from Madras.	
do.	.....	Asst. Surg. W. H. Rean, M.D.....	.....	Zillah Surgn. at Chicacole.
do.	.....	do W. J. vanSomeren, M.D.....	Is permitted, in compliance with his own request, to resign the appointment of Professor of Anatomy in the Medical College from the 7th instant.	
do.	.....	do W. N. Chipperfield.....	.....	Professor of Anatomy and Physiology in the Medical College.
.....	11th Oct.	do J. FitzGerald.....	Has been examined in the Hindoostanee language and is qualified for *Medical charge.*	
.....	do	do W. H. Morgan.....	d. d. 17th Regt. N. I.....	17th Regiment N. I.
.....	do	do J. FitzGerald.....	Permitted to enter on the general duties of the Army.	
.....	do	do G. Williamson, M. D.....	do do do	
.....	12th Oct.	Apothecary A. Spiers.....	Late promotion.....	d. d. Depot of Poonamallee.
.....	do	2nd Apothecary S. Newman.....	Late from Bengal.....	Collector's Establishment, Salem.

.....	do	do	C. J. Riggs.....	Collector's Establishment Salem...	d. d. Dept. of Dy. Inspr. General of Hospitals. Mysore division.
.....	do	do	M. Kingsley.....	d. d. Ramandroog.....	d. d. Ootacamund.
.....	do	Assistant Apothecary	J. A. Falloon.....	Dept. of Depy. Inspt. Genl. of Hosptls. Northern division.....	d. d. Sebundy Corps, Nursapatam.
.....	do	do	G. Watson.....	Ootacamund.....	d. d. 2nd European L. I.
.....	do	do	G. Bailey.....	Dept. of Depy. Inspt. General of Hospitals, Pegu division.....	34th Regt. L. I.—*To join.*
.....	do	do	D. Callaghan.....	11th Regiment Native Infantry...	Dept. of Dy. Inspr. Genl. of Hosptls. Pegu division.
.....	do	do	J. D. Jones.....	34th do Light Infantry.....	11th Regt. N. I.—*To join.*
.....	do	do	E. Trutwein	22nd do Native Infantry...	40th do
.....	do	do	A. J. Butterfield.....	49th do do	23rd do L. I.—*To join on the arrival of the Corps at Secunderabad.*
.....	do	do	C. Jordon.....	23rd do Light Infantry.....	5th Regiment L. C.
.....	do	do	C. D'Santos.....	H. Troop Royal Horse Artillery.	d. d. Dept. of Dy. Inspt. Genl. of Hospls. Presy. d. d. 5th Bat. Arty.
.....	do	do	T. Mergler.....	Late promotion.....	22nd Regiment N. I.
.....	do	do	D. Arklie.....	do	49th Regt.—*To join without delay.*
.....	do	Paid Candidate	J. Green.....	Triplicane Dispy.....	General Hospital.
.....	do	do	F. C. Thomson.....	Native Infirmary.....	do
.....	do	Assistant Apothecary	C. Robertson.....	Dept. of Dy. Inspt. Genl of Hosps.	d. d. with the Ganjam Survey Parties.
.....	do	do	J. Hardaker.....	.....	Do. do
.....	do	do	R. H. Legge.....	Dept. of Depy. Inspt. General of Hospls. Hyd. Subsy. Force.....	d. d. with H. Troop Royal Horse Artillery.
.....	do	do	J. Isacke.....	1st Battalion Artillery.....	d. d. 5th Bat. Arty. until relieved.

Dates of G. O. G.	Dates of G. O. C. C.	Rank and Names.	From.	To.
1860.	1860.			
16th Oct.	.....	Vety. Surgn. E. B. Dawson.....	Vety. Surgeon of the Remount Depot at Oossoor, is, at his own request, placed at the disposal of His Excellency the Commander in Chief.	
do	.....	do F. J. Shaw.....	....	Vet. Surgn. of the Remount Depôt at Oossoor.
do	.....	Asst. Surgn. W. J. vanSomeren, M. D.....	Arrived at Madras on the 7th Oct. 1860 from Europe.	
.....	16th Oct.	Vety. Surgeon E. B. Dawson	.....	6th Regiment L. C.
.....	do	Assistant Apothecary W. Wright.....	Of the 7th Regt. N. I., suspended from Rank, Pay and Allowances, for the period of 3 Calendar months, by sentence of a European District Court Martial.	
19th Oct.	.....	Asst. Surgn. C. W. White, M. D.....	Is removed from the effective list from this date, and admitted to a Pension of 2s. 6d. per diem.	
23rd Oct.	.....	do H. B. Montgomery, A. B. & M. D.	Europe on s. c. for 15 months, under the regulations of 1854.	
do	.....	do W. J. vanSomeren, M. D.....	.....	Actg. as Prof. of Materia Medica and Botany in the Medical College.
do	.....	do W. N. Chipperfield.....	....	Acting as Garrison Assistant Surgeon of Fort St. George.

.....	16th Oct.	do	W. H. Rean, M. D.	Zillah Surgn. Chicacole, now at the Presy., to afford Medical aid to the European details proceeding to Masulipatam and Vizagapatam on the Steamer "Dalhousie" on the 17th instant.	
.....	do	Assistant Apothecary	D. Arklie	Of the 49th Regt. N. I., now at the Presy., to do duty with the above details as far as Masulipatam, when he will afford Medl. aid to those proceeding thence by transit to Secunderabad, on being relieved he will join his Regiment.	
.....	22nd Oct.	Surgeon Major	E. S. Tribe	41st Regiment Native Infantry...	2nd Regiment N. I.
.....	do	Surgeon	H. T. W. Harper	.....	41st do
.....	do	Asst. Surgn.	J. S. Ridings, M. D	.....	20th do
.....	do	do	G. E. Whitton, M. B. & B. A.	d. d. C Troop Horse Arty. temply.	
				d. d. H. M. Dragoon Guards,...	11th do
.....	do	Assistant Apothecary	F. B. Pereria	d. d. H. M. 18th Royal Irish	Mysore Commission.
.....	do	do	P. G. Paul	Late Senior Surgeon's Department Moulmein, d. d. 37th Regiment Grenadiers, ...	37th Regt. Grenadiers.
.....	do	do	G. Marrow	37th Regt. Grenadiers d. d. Arty. Moulmein	d. d. Arty. Moulmein.
.....	do	do	C. Thipthorp	Late 1st Extra Regiment N. I.....	d. d. temporarily at Dumugudien, under the supervision of the Medl. Officers at Dowlaishwaram.
.....	do	do	D. H. Gray	Royacottah	d. d. H. M.'s 18th Royal Irish.
26th Oct.	.....	Assistant Surgeon	D. W. Trimnell	Services placed at the disposal of the Govt. of the North Western Provinces.	

Postings and Removals of the Commissioned and Warrant Medical Officers, &c.—(Continued.)

Dates of G. O. G.	Dates of G. O. C. C.	Rank and Names.	From.	To.
1860.	1860.			
30th Oct.	.....	Assistant Surgeon J. Kirkpatrick, M.D.	Surgeon Mysore Commission, obtained privilege leave of absence for three months from the 1st instant.	
do	.....	do J. Houston	Gar. Asst. Surgeon of Bangalore will perform Dr. Kirkpatrick's duties during his absence.	
.....	29th Oct.	do C. B. Craske	Is permitted to remain on the Neilgherries on duty, until further orders.	
.....	do	Paid Candidate T. D. Newcastle	d. d. Gar. of Vizagapatam, having quitted his station without authority, is discharged the Service as a deserter.	
.....	30th Oct.	Assistant Apothy. J. A. Beckett	Department of Dy. Inspt. Genl. of Hospls. Bangalore, Vellore, and Eastern Coast on S.C., from 13th Oct. 1860 to 15th Oct. 1861.	
2nd Nov.	.....	Surgeon H. T. W. Harper	Arrived at Madras on the 24th Oct. 1860 from Europe.	
.....	29th Oct.	Assistant Apothecary J. D. Jones	Of the 11th Regt. N. I., now at the Presy., to afford Medl. aid to the details (Eurpn. and Native) proceeding to the Northern Ports and Rangoon on the Steamer "Dalhousie" on the 31st instant.	

.....	31st Oct.	2nd Apothy. S. B. Kemp.....	To be placed at the bottom of the list of 2nd Apothecaries by sentence of a District Court Martial held at Pehting in China, and his name is accordingly transposed in the list of 2nd Apothecaries of the Medl. Establishment, and he will stand in future next below 2nd Apothy. J. West.	
.....	1st Nov.	Vety. Surgn. E. B. Dawson.....	6th Regt. L. C.....	d. d. Horse Arty. during the absence of Vety. Surg. Thacker or until further orders.
6th Nov.	.....	The name of Assistant Surg. James Thomas Doyle will be hereafter borne on the Records of the Army as James Thomas Joseph Doyle.		
.....	3rd Nov.	With the sanction of Govt. Asst. Surg. G. Williamson, M.D., d. d. under the Surgeon Major 1st Bat. Arty., is appointed to the Med. charge of the Invalids, &c., under orders for embarkation on the Ship "Helvellyn."		
... .	do	So much of the G. O. C. C. of the 22nd ultimo as removes Asst. Surg. G. E. Whitton, M.B. and B.A., from C Troop Horse Arty. and d. d. H.M.'s 1st Dragoon Guards, and posts him to the 11th Regt. N. I., is cancelled.		
.....	do	Asst. Surg. G. Mackay, M.D., Senior Med. Officer, Neilgherries, having returned to duty on the 19th ultimo, the unexpired portion of the privilege leave granted in G. O. C. C. 21st Sept. 1860, is cancelled from that date.		

Postings and Removals of the Commissioned and Warrant Medical Officers, &c.—(Continued.)

Dates of G. O. G.	Dates of G. O. C. C.	Rank and Names.	From.	To.
1860.	1860.			
.....	3rd Nov.	Apothy. G. Sampson of the Pension Estab., is permitted to reside and draw his stipend at Negapatam.		
....	5th Nov.	Asst. Surg. G. Mackay, M. D., Senior Med. officer, Neilgherries, from the date of departure for 30 days, *privilege leave*		
.....	do	Apothy. B. A. Bond, Dept. of Depy. Inspt. Genl. of Hospls. Southn. Division, in continuation to the 19th March 1861—Sea and Eastern Coast on S.C.		
.....	do	2nd Apothy. J. Westwood, late from Bengal, Eastern Coast and Neilgherries on S.C. from 8th Oct. 1860 to 15th Oct. 1861.		
9th Nov.	.....	Surg. Major W. C. MacLean, M.D., Surg. 3rd District, having been appointed a Professor in the Army School of Medicine at Chatham by the Right Honorable the Secy. of State for India, is granted a special furlough to proceed to Europe for two years.		
do	.....	Surg. C. M. Duff, M.D.	.....	Surg. of the 3rd District until further orders.
do	.....	Asst. Surg. A. A. Renton, M.D., Zillah Surg. of Coimbatore is granted privilege leave for one month		
.....	9th Nov.	2nd Apothecary F. Pearl, passed the Board of Examiners at Tonghoo as Apothecary.		

.....	do	Asst. Apothy. E. S. Mayley.....	Of the 6th Regt. L.C.....	d. d. temply. in the Dept. of Depy. Inspt. Genl. of Hospls. Northn. division until further orders—*To join forthwith.*
....	do	do E. A. Morris...	Of the Dept. of Depy. Inspt. Genl. of Hospls. Ced. Districts.....	
.....	do	Paid Candidate A. J. J. Jansen...	d. d. Depot. Poonamallee... ,,.....	Do. do do d. d. Vepery Dispensary.
13th Nov.	.....	Asst. Surg. H. J. Beach.....	Services placed at the disposal of the Govt. of India, for employment in the Nagpore Provinces.	
do	.....	do J. Law, M.D.....	Do do do	
do	.....	do H. C. Brodrick, M.D.....	Permitted to return to duty.	
do	.....	do W. J. vanSomeren, M.D....	Do. do do	
do	.....	do H. T. W. Harper.....	Do do overland 20th September.	
do	....	Surgeon W. Lloyd, M. D., to retire from the 18th Nov. 1859, on account of the state of his health.		
16th Nov.	.....	Asst. Surgn. H. C. Brodrick, M. D., of the 1st Corps of Central India Horse, arrived at Bombay on the 26th September 1860, from Europe.		
do	....	Asst. Surg. W. R. Grylls, M. D., is appointed to be Civil Asst. Surg. of Seonee, with effect from the 12th September last.		
.....	14th Nov.	The G. O. C. C. of the 3rd (Nov.) instant appointing Asst. Surg. G. Williamson, to the Medical charge of the Invalids, &c., under orders for embarkation on the Ship "Helvellyn," is cancelled.		
.....	do	Pensioned Apothecary R. Bastian, is permitted to reside and draw his stipend at Ootacamund from 1st Proximo.		

Dates of G. O. G.	Dates of G. O. C. C.	Rank and Names.	From.	To.
1860.	1860.			
.....	15th Nov.	Medical Appce. W. G. Johnson, having absented himself from the Medical College without leave since 3rd October 1860, is struck off the strength of the Subordinate Medl. Dept. as a deserter from that date.		
20th Nov.	.....	Surg. R. R. Sutleffe, to take rank from the 19th Nov. 1859, vice Lloyd retired.		
do	.....	Surgeons J. Ratton, Wm. Forester, and H. J. Penny, F. R. C. S., to take rank from the 30th Nov. 1859, vice Reid, Kellie and Evans retired.		
20th Nov.	.....	Surgeon C. M. Duff, M. D., to take rank from the 2nd January 1860, vice Geddes, retired.		
do	.....	Surgeon H. Young, to take rank from the 19th February 1860, vice Shewan, retired.		
do	.....	Surgeon H. T. W. Harper, to take rank from the 1st March 1860, vice Arthur, retired.		
do	.....	Senior 1st class Asst. Surg. C. B. Craske to be Surgt. from the 2nd Sept. 1860, vice Maillardet retired, to complete the establishment.		
27th Nov.	.....	Asst. Surg. A. I. Scott, M. D., Asst. Assay Master, received charge of the Assay Dept. from Dr. Shaw on the 26th instant.		
do	.....	Surgeon R. R. Sutleffe has an extension of leave granted to him for six months by the Honorable the Secretary of State for India.		

.....	14th Nov.	Apothecary J. Tyrell.....	Dept. of Dy. Inspt. Genl. of Hospitals Presy.....	d. d. with the det. of H. M. 43rd Regt. at Palaveram until further orders.
.....	24th Nov.	Asst. Surg. G. E. Whitton, M. B. and B. A.....	d. d. C. Troop Horse Arty.	C. Troop Horse Arty.
.....	do	2nd Apothecary G. Honor has passed the Board of Examiners at Shanghai, China, for the grade of Apothecary.		
.....	do	2nd Apothecary M. Kingsley, d. d. at Ootacamund, having been reported by a Board of Med. Officers at that station as fit for duty, the leave granted in G. O. C. C. dated 12th June 1860 is cancelled from the 12th instant.		
30th Nov.	.....	Asst. Surg. J. B. Fleming, Supt. of the Central Jail, Hyd. Assigned Dists., has obtained privilege leave for one month from the 17th instant, or from the date on which he may quit his station.		
do	.....	Asst. Surg. D. W. Trimnell is appointed to be Civil Asst. Surgeon of Nursingpore, with effect from the 6th April 1860.		
.....	30th Nov.	Surg. C. M. Duff, M. D., having assumed charge of the 3rd District on the 13th instant, the unexpired portion of the leave of absence granted him in G. O. C. C. dated 9th ultimo, is cancelled from the above date.		
4th Dec.	.....	Asst. Surg. C. J. Rogers to be Med. Officer on the Neilgherries, vice Asst. Surg. G. Mackay, M. D.		
.....	3rd Dec.	Under the sanction of Government, the services of Asst. Apothy. J. H. McClosky are placed at the disposal of the Govt. of Labuan for employment as Colonial Apothy., vice Harris.		

Dates of G. O. G.	Dates of G. O. C. C.	Rank and Names.	From.	To.
1860.	1860.			
7th Dec.	.....	Asst. Surg. W. Traill, M. D., is permitted to retire from the Service on a pension of £191-12-6 per annum, from the date of his embarkation at Singapore on or about the 10th January 1861.		
do	.....	Assistant Apothecary T. Conquest, is permitted to resign the service at his own request.		
.....	7th Dec.	Surgeon C. B. Craske, 10th Regiment N. I., is to be considered as having been detained at Ootacamund on duty from the 12th Oct. to the 22nd Nov. 1860, inclusive.		
.....	do	Assistant Surgeon D. Kearney, is permitted to enter on the general duties of the Army from the 8th ultimo.		
.....	do	Assistant Surgeon F. O. B. Wither, is permitted to enter on the genl. duties of the Army.		
.....	do	Senior Apothy. J. G. Williams, Port and Marine Surgn's. Dept., leave for 3 months from 1st December 1860.		
.....	o d	Apothecary F. Huntley, d. d. at the hospital, Trimulgherry—Bangalore and Western Coast S. C. from 21st Nov. 1860 to 20th November 1861.		
.....	10th Dec.	Vety. Surgeon G. Western.....	5th Regt. L. C.....	d. d. H. M. 1st (King's) Dragoon Guards—to join at Bangalore.

14th Dec.	.....	Asst. Surgeon J. Ross, M. B.—Europe on S. C. 18 months under the regulations of 1854.		
.....	13th Dec.	Asst. Surgeon J. D. Gillies, M.D., having been reported by a Board of Med. Officers at the Presy., fit for duty, the unexpired portion of the leave of absence granted in G. O. C. C., dated 12th June last, is cancelled from the 1st instant.		
.....	do	Asst. Apothy. R. G. Wright of the 12th Regt. N. I., has been sentenced by a European District Court Martial, to be suspended from Rank, Pay and Allowance for the period of 90 days.		
.....	18th Dec.	Asst. Apothy. W. Barren, d. d. Civil Dispy. Raneepett—Madras, and Bangalore S. C. from 17th Nov. 1860, for 2 months.		
.....	22nd Dec.	With the sanction of Govt. Asst. Surgeon W. Doyle, F. R C. S., is as a special case to be considered as having been posted to the A Co. 3rd Bat. Arty., with retrospective effect from Dec. 1856 to April 1858 inclusive.		
.....	do	2nd Class Asst. Surgn. J. T. Williams attained the position of 1st Class Asst. Surgn. on the 20th Dec. 1860.		
.....	24th Dec.	Assistant Surgeon J. D. Gillies, M.D.	.....	d. d. Dept. of Depy. Inspt. Genl. of Hospls. Southn. Division.
.....	do	do W. H. Harris, ...	.....	d. d. Dept. of Depy. Inspt. Genl. of Hospls. Northn. Division, to be in Medl. charge of the Officers and people employed on the Kistna Anicut and its subsidiary works.

Postings and Removals of the Commissioned and Warrant Medical Officers, &c.—Continued.)

Dates of G. O. G.	Dates of G. O. C. C.	Rank and Names.	From.	To.
1860.	1860.			
.....	24th Dec.	Apothy. G. Smith, Garrison of Cannanore, in continuation till 30th June 1861—Bangalore and Eastern Coast, s. c.		
.....	do	2nd Apothy. P. Heron, H. M. 18th Royal Irish—Madras and Eastern Coast, s. c. from 10th Dec. 1860 to 10th March 1861.		
.....	do	Asst. Apothy. J. Green, H. M. 1st Royal Regt., in continuation to the 17th Jan. 1861, to enable him to join.		
.....	28th Dec.	Asst. Apothy. T. F. Vint, d. d. 30th Regt. N. I., having been sentenced to dismissal from the Service by a District Court Martial duly confirmed, his name will be struck off the list of the Subdt. Medl. Dept., from the date of receipt of this order at Bellary, which is to be reported to the Principal Insptr. Genl. Medical Department and to Army Head Quarters.		
31st Dec.	.....	Asst. Surgn. J. P. Nash, M.D., Europe on s. c. for 18th months under the regulations of 1854.		
do	.....	Asst. Surgn. J. B. Fleming, Supt. of the Central Jail, Hyd. Assigned Districts, availed himself on the 22nd ultimo of the one month's privilege leave granted to him in the Calcutta Genl. Order of the 13th idem, No. 5439.		

.....	31st Dec.	2nd Apothy. J. F. Rogers, Depôt of Cuddalore—Bangalore and Eastern Coast s. c. from 10th Dec. 1860 to 1st May 1861.
.....	do	2nd Apothy. G. Honor, late from H. M. 44th Regt. China, leave to Bangalore from 24th Dec. 1860 to 30th April 1861.
.....	do	2nd Apothy. D. Keess, in continuation to 31st March 1861—Cuddalore, and Bangalore, s c.
.....	do	Asst. Apothy. T. Ward, Madras and Cuddapah, on leave from date of departure for 5 months.

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PART I.

ORIGINAL ESSAYS.

ART. VII.—*Notes on some of the Indigenous Medical Plants of India.* By EDWARD JOHN WARING, Esq., Physician to His Highness the Rajah of Travancore.

(Continued from Vol. I. p. 79.)

INDIGENOUS PURGATIVES.

IN commencing an enquiry into the indigenous purgatives of India, our attention is first naturally directed to the four large Natural orders, Euphorbiaceæ, Cucurbitaceæ, Convolvulaceæ, and Leguminosæ, the plants belonging to which yield some of the most important and valuable of the purgatives which hold a place in our Materia Medica.

Commencing with the consideration of the Euphorbiaceæ, we find that India is peculiarly rich in plants of this order; no less than 112 species are enumerated by Roxburgh as known in his time, since when the number is now doubtless greatly increased.

Purgatives of the Nat. Order Euphorbiaceæ.

Previous to entering on the consideration of the individual species, we shall briefly notice a few points relative to the purgative operation which a large number of the species possess in common, even though we may have subsequently to notice

some of the same points when speaking of individual species.

1. The purgative principle in Euphorbiaceous plants resides chiefly, or in the greatest intensity, in the fruit, though in some species it is found to exist likewise, though in a minor degree, in the leaves, root, and other parts of the plant; of this we have examples in the *Croton tiglium*, and the *Ricinus communis (infra.)* In some this purgative principle exists in the milky juice; e. g. *Euphorbia antiquorum*, and allied species.

2. It is extremely probable that the purgative principle of all the Euphorbiaceous fruits is identical, and that it exists in the form of an acrid resin, which has been found uniformly present in those specimens which have been subjected to chemical analysis. "The brownish yellow resin," found by Brandes in croton oil seeds, "the acrid principle, probably, resinous," detected by Soubeiran(1) in the castor oil seeds, and "the peculiar fixed acrid resin" detected by the same chemist (Ibid. p. 103) in the seeds of the English physic-nut, (*Jatropha curcas,*) are probably closely allied if not actually identical. This view is strengthened by the similarity in the train of symptoms induced by large or poisonous doses of the seeds of this class of plants. In each we observe hypercatharsis, vomiting, great abdominal pain, cold sweats, great prostration and syncope; *post-mortem* examination disclosing in each case, inflammation of the intestinal canal. As still further corroborating this view, it may be added that in each case copious draughts of lime juice mitigate or remove the ill effects of large or excessive doses.

3. They all likewise contain a greater or less proportion of fixed fatty oil.

4. The differences observed in the operation of these several seeds, (for, as is well known, they differ considerably in their potency of operation,) probably depend upon the proportions of the fixed oil which they respectively contain, and also upon the solvent power of the oil itself. Thus the croton seeds which contain a very small proportion of the fixed oil, are far more powerful in their operation than the castor oil seeds, which contain it in a far greater proportion; whilst the English physic-nut seeds, which contain more oil than the croton seeds and less than the castor oil seeds, hold

(1) Journ. de Pharm. 1829, vol. xv, p. 507.

an intermediate place. The larger proportion of fixed oil found in castor oil seeds may also operate in a degree mechanically, by protecting the mucous coats of the stomach and intestines from the immediate or too irritant contact of the acrid resinous principle. Further evidence in support of the opinion that the potency of action depends in a great measure upon the solvent power of the fixed oil, is to be found in the fact that after the extraction of the oil, either by expression or coction, the residue or mark retains considerable power as an emetico-cathartic. This was found to be the case with respect to castor oil seeds by M. Collond,(1) and with those of the physic-nut *(Jatropha curcas)* by Prof. Christison.(2)

5. A popular belief exists, which has apparently been held from the earliest ages by Hindu writers, that the acrid emetico-cathartic principle of the Croton, Castor, and English Physic-nut seeds, resides principally, or at least in the greatest intensity, in the cotyledon or embryo. Amongst modern scientific authorities who entertained this opinion may be mentioned Jussieu.(3) It would be an extremely difficult point to settle conclusively, but the following fact is worthy of note as tending to support the popular belief. In the West Indies is an Euphorbiaceous plant, the *Omphalla triandra* or *Hog nut tree*, the kernels of which are described as delicately sweet and wholesome, like the best chestnuts, and the oil expressed from them is bland and inert, whilst we learn from Lunan(4) that the embryo or cotyledon operates as an emetic and purgative. Another fact may be mentioned as bearing on the same point. The kernels of the *Hura crepitans* or *Sand-box tree*, another Euphorbiaceous tree of Jamaica, are in their natural state an extremely acrid emetico-cathartic; but Dr. W. Hamilton,(5) mentions having met with an American captain who was in the habit of constantly carrying about with him some of these kernels, *with the cotyledon carefully removed*, and of these he took four or five in the morning to relieve the bowels, which they did without causing sickness, pain, or griping.

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(1) Lond. Pharm. Journ. 1849, vol. viii, p. 491.

(2) On Poisons, p. 591.

(3) Genera Plant, p. 392. For the views of different authorities on this subject consult also Deyeux in Ann. de Chim. lxxiii, 106. Boutron Charlard et Henri, in Journal de Pharmacie, x, 466. Bussy et Lecanu, Ibid. xii, 481.

(4) Hort. Jamaicensis i, p. 204.

(5) Pharm. Journ. ix, p. 13.

6. The various degrees of potency of the purgative oils derived from plants belonging to this order, have recently been examined by Dr. O. Rorke,(1) who divides them into the following classes :—

Emetico-cathartic Oils.

Oil of Croton tiglium.....	1— 2	drops.
Jatropha curcas.....	8— 12	do.
Euphorbia lathyris.....	15— 30	do.
Anda gomesii (Brazil).....	30— 45	do.
Hura crepitans (West Indies).....	75—150	do.
Ricinus communis.....	1— 2	ounces.

Simply Purgative Oil.

Oil of Aleurites triloba.....	1— 2	do.

Inert Oil.

Oil of Omphalea triandra.....	1— 2	do.

Oils, the properties of which are undetermined.

Elæococca verrucosa.
Stillingia sebifera.

With these long preferatory remarks we will now proceed to enumerate the plants of this order possessed of purgative properties, which are indigenous in India.

The most important purgative of this order is the true *Purging croton*, the *Croton tiglium* of Linnæus, (Sp. Pl. 1426; Roxb. Flor. Ind. iii, p. 682,) *the Croton jamalgota* of Hamilton, (Linnæan Trans. xiv, p. 258,) and the *Cádél avanacu* of Rheede. (Hort. Mal. ii, p. 61, t. 23.) It is generally regarded as the *Granum moluccum* of Rumphius, (Herb. Amb. ii, p. 64, t. 83,) but it is doubtful whether the species he describes and figures does not rightly belong to *Croton pavana. (infra.)* It attains the size of a small tree, 15-20 feet high, and is found in many parts of India, from Assam to Cape Comorin; it is indigenous likewise in Ceylon, Burmah, Java, and the Moluccas. Its Eastern vernacular names are *Jayapala*, (Sans.) *Datoon, Danti, Jay-pal, Jamalgota* (Hind.) *Jypal*, (Beng.) *Habbi slatun*, (Turk.) *Nirvalum kotay*, (Tam.) *Nepalum vittuloo*, (Tel.) *Cádél avanācu*, (Mal.) *Bori*, (Malay.) *Cheraken tscheraken.* (Javan.) *Nepalam, Wayapala*, (Cing.) *Jepalu*, (Canar.) *Kan-na-koh*, (Burm.) *Na-man-tha-lank*, (Siam.) *Khoni-bhi*, (Assam.) *Pateu* (Chin.) All parts of the

Croton tiglium.

جمال گوٹہ

Jamālgotā.

(1) Ann. de Therap. 1859, p. 117.

plant possess acrid properties, but it is only the wood and the seeds which require notice in this place.

The wood *(Lignum pavanæ,* seu *Moluccense,)* was in former times in considerable repute as a drastic purgative, for which purpose it was administered in doses of from grs. iv. to grs. x., broth being the vehicle usually employed. It is described as light and spongy, covered with a thin grey bark, having a nauseous smell, and pungent caustic taste. It is quite exploded in modern practice.

The seeds *(Grana* or *Semina tiglii, Grana tilli, Grana dilla, Grana moluccana, Nuclei pinei moluccani, Tyle berries, Purging nuts,)* appear to have been unknown to the ancient Greek and Roman writers; though Avicenna,(1) and Serapion(2), both describe them under the name of *Dend,* or *Dende.* In the Ulfaz Udwiyeh, they are mentioned under the Arabic name of *Kub-us sulateen;* (No. 755;) and in the Taleef Shereef (No. 439) under that of *Datoon.* The opinion of Mr. Blakesley, (quoted by Drury in his Useful Plants of India, p. 170) that the plant *Sillicypria* and its fruit named *Kiki,* mentioned by Herodotus,(3) refer to *Croton tiglium,* is untenable, as the historian speaks of the plant growing in Greece, which this species of croton does not. It is more probable that a species of Ricinus is meant. The first distinct mention of the seeds is by D'Acosta,(4) in 1578; he speaks of them by the name of *Pini nuceli moluccani,* and he mentions that the seeds are termed by the Canarese *Japala,* (Jayapala) the classical Indian name of the present day. The wood, however, appears to have received much more notice than the seeds, and they fell into disuse till 1813, when Ainslie called attention to them in his Materia Medica of Hindostan. Eleven years subsequently Dr. Conwell published his Recherch. sur les. Prop. Med. de l' Huile de Croton tiglium (8vo. Paris, 1824), since which period, the expressed oil of the seeds, croton oil, has been in universal use. Those desirous of investigating the early history of the drug, will find much interesting matter in the learned papers on the subject, by Prof. Wilson,(5) Drs. Adam,(6) Iliff,(7) Frost,(8) and Tavernier(9).

Croton seeds in their natural state are a powerful irritant

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(1) Lib. ii, cap 219.
(2) De Simpl. 348.
(3) Lib. ii, cap. 94.
(4) Clusius Exot. p. 292.
(5) Med. Phys. Trans. of Cal. 1, p. 248.
(6) Ibid 1, p. 279.
(7) Lond. Med. Repos. vol. xvii.
(8) Ibid 1822.
(9) Nono Bibl. Med. ix, p. 198.

poison, acting especially on the mucous intestinal lining membrane. Their activity as a purgative depends on the presence of a fixed oil, holding an acrid principle in solution. *(infra.)* In addition to this, they contain a volatile acrid principle, the vapour of which causes great irritation of the eyes, lining membrane of the nares, &c., amongst those engaged in the manufacture of croton oil. The acid, called Croton or Jatrophic acid, which they contain, is inert, as is supposed to be also the peculiar crystallizable principle found in them which has been named Crotonin. It is supposed that a great portion of the acridity of the seeds resides in the seed coat, and in the embryo, and that this is at any rate partially the case, I am induced to believe by the greater mildness with which they operate when these portions have been carefully removed.

Though unfit for internal administration in the natural state, they prove, when properly prepared, a safe and efficacious purgative; for this purpose they are prepared by boiling the seeds three times successively in milk, and after each boiling, drying them well, and carefully removing the outer shell, and the embryo. If the latter is allowed to remain, violent tormina and vomiting are apt to ensue. To 3i. of the seeds thus prepared, 3ii. of catechu should be added and the mass divided into two grain pills, a few drops of Ol. Menth. Pip. may be advantageously added to the mass. This mode of preparation, first proposed by Dr. White,(1) renders the seeds a valuable resource to the Indian practitioner; and Mr. Marshall justly observes—"To the field surgeon it is no unimportant recommendation that 500 doses may be contained in a small wafer-box, and be purchased for half a rupee." I have used these pills in some hundreds of cases, amongst the Burmese, and have generally found their action uniform, producing five or six copious watery stools, and operating within two or three hours after being swallowed. Any excessive operation is almost immediately checked by a draught of lemon juice.

The expressed oil of the seeds, *Oleum tiglii, Crotonis oleum, Croton oil,* varies in colour from pale brown to a dark reddish brown, with a feeble sickly smell, and an acrid persistent taste. Taken internally, in doses of gutt. i-ii-iii., it acts as a powerful drastic purgative; in larg doses it proves poisonous, and Christison(2) quotes a case of a young

(1) Ainslie's Mat. Med. p. 294. (2) On Poisons, p. 593.

man who swallowed two drachms and a half of it by mistake; he was soon seized with tenderness of the belly, violent efforts to vomit, cold sweating, laborious respiration, blueness of the lips and fingers, and an almost imperceptible pulse; then with profuse, involuntary discharges by stool, burning, along the throat and gullet, and insensibility of the skin, and in four hours he expired. The villous coat of the stomach was soft, but not otherwise injured. It appears to exercise a specific influence on the intestinal mucous membranes, as when injected into a vein it has caused death, and the whole of the intestinal canal has been found in a state of inflammation, and when applied to a blistered surface, it speedily induces its cathartic operation. For internal use it may be administered in the form of pill with bread crumbs; or if the patient from any cause be unable to swallow, it may be placed at the root of the tongue, its full purgative action being equally attainable in this latter way.

The smallness of the dose required, the rapidity of its action, and its powerful purgative effect, render it peculiarly valuable in apoplexy and other cerebral affections. In some persons it produces, even when given in small doses, severe hypercatharsis, which has occasionally proved fatal. It is more speedy in its operation than any other cathartic, producing copious watery stools in one or two hours, and sometimes in even a shorter period after its administration. Alkalies are said to modify the acrimony of the oil, without imparing its cathartic properties, and the addition of a small portion of opium diminishes the violence of its action.

Croton oil is especially indicated in cases where it is desirable to produce speedy and strong catharsis; thus in cerebral affections, in coma, apoplexy, mania, &c., its operation is often attended with signal benefit, a drop or two placed at the back part of the tongue, when the patient is unable to swallow, acting with promptitude and energy. In obstinate constipation, colica pictonum, dropsy, &c., it has also been resorted to with the best effects. Of the value of the oil as an external agent we shall have occasion to speak in another place.

Croton polyandrum.
Hāpoon (Hind.)

A closely allied species, *Croton polyandrum* of Roxburgh, (Flor. Ind. iii, p. 682,) the *Croton Roxburghii* of Wallich, the *Baliospermum polyandrum* of Wight, (Icones, vol. v, tab. 1885,) the *Jatropha montana* of Willdenow (Sp. Pl. iv, p. 563,) is a

native of Bengal, extending northward to the banks of the Jumna, and is found also in the Circar Mountains, and in Burmah. Its native names are *Hāpoon*, (Hind.) *Hakooi, Duntee*, (Beng.) *Konda amadum, Nela-jidi*, (Tel.) *Tha-dee-wa*. (Burm.) The seeds are esteemed by the natives as a good purgative; they administer one, two, or three seeds, bruised up with water, according to the effect they wish to be produced. Some writers consider that these are the real Jamalgota of the Hindūs, whilst others, with more reason, think that Croton tiglium is the plant producing the real drug.

Croton pavana.

The Croton pavana of Hamilton, (Linnæan Trans. xiv, p. 259,) is supposed by this botanist to be the *Granum moluccum* of Rumphius, (op. cit.) the original *Tilly-seed plant*, but the point must be considered as unsettled. It is a native of Ava, the North-Eastern provinces of Bengal, and of Amboyna. The seeds are much smaller than those of the preceding species, but there appears little doubt that they yield a purgative oil, equal, probably, to that of the Croton tiglium.

Croton oblongifolium.

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Chucka.

Croton oblongifolium (Roxb. Flor. Ind. iii, p. 685,) is a native of Bengal and Upper India, where it is known by the names of *Chucka*, (Hind.) and *Buro-gach*, (Beng.) The fruit is used as a purgative in doses from gr. ½ to grs. iii. (Irvine.)[1]

Jatropha curcas.

بگریڈي

Bagrendī.

The genus *Jatropha* contains two plants of undoubted activity as purgatives; the first in rank of these is the *Jatropha curcas* of Linnæus, (Sp. Pl. 1429,) the *Curcas purgans* of Adanson, *the Castiglionia lobata* of Ruiz and Pavon. It is a common roadside shrub throughout the whole of India, where it is known by the names of *Nepala kanana, Kerundum*, (Sans.) *Bagrendī* or *Bagh-berenda*, (Hind.) *Bagh-danana*, (Beng.) *Népálum*, or *Adivie amida*, (Tel.) *Kattu amunak*, (Tam.) *Mara hárálú*, (Can.) *Ruta endum*, (Cing.) *Dsharrak-pagger*, (Javan.) *Thembau-kyet-hsoo*. (Burm.) It is not, however, confined to India, but exists plentifully in the tropical por-

(1) Mat. Med. of Patna, p. 128.

tions of Africa, South America, and the West Indies. Its seeds, called the *English* or *American Physic nuts*, or *Barbadoes nuts, Gros pignon d'Inde*, (Fr.) to distinguish them from those of the next species, have the shape of castor oil seeds, but are black, somewhat rough to the touch, and are marked with numerous minute cracks. They are accurately figured and described by Guibourt(1) under the name of *Semences de Curcas purgatif.* They have been analyzed by Cadet de Gassicourt(2) and by Soubeiran.(3) The latter chemist found in them a fixed oil, a peculiar fixed acrid resin, saccharine matter, gum, a small quantity of fatty acid, glutine (emulsion), a free acid (malic?) and some salts (Pereira.)(4)

Taken internally they act as a drastic cathartic and emetic; these properties, like those of the Euphorbiaceous plants, already mentioned, reside in a fixed oil which holds a portion of the acrid resin, the true active principle, in solution. The proportion of oil which they contain is very large; thus Guibourt (op. cit.) obtained from 656 grammes of the cleansed kernels no less than 265 grammes of oil, which he describes as colourless, very fluid, and depositing when cold a large quantity of stearine. It differs, he remarks, from castor oil by its very slight solubility in alcohol, not dissolving in 24 parts of absolute alcohol.* The seeds are said to loose much of their violence of action by roasting, but this is doubtful. Mr. Bennett(5) found that four seeds caused a burning sensation in the stomach and bowels, together with violent vomiting and purging, which passed off in the course of a few hours, the burning sensation, however, lasting much longer. Their action is that of a local irritant; as Dr. Christison(6) observes that when applied in the form of powder to a wound, they produce violent spreading inflammation of the subcutaneous cellular tissue; and that when introduced into the stomach, they inflame that organ and the intestines; and he adds that he has known violent vomiting and purging occasioned by a few grains of the cake or residuum left after expression of the fixed oil from the bruised seeds. The same authority, in his Edinburgh Dispensatory, (p. 794) states that he instituted some experi-

(1) Hist. des Droques ii, p. 334.
(2) Journ. de Pharm. t. x, p. 176, 1824.
(3) Ibid, t. xv, p. 503, 1829.
(4) Mat. Med. ii, p. 1293.
(5) Lond. Med. Gaz. ix, p. 7.
(6) On Poisons, p. 591.

* For a further account of the chemical history of this drug see Chemial Gazette, December 15th, 1854, p. 469.

ments with this oil; that one dose from Barbadoes seeds acted precisely like castor oil, in doses of gutt. x—xv, or xx, but that another, from Jamaica seeds, sometimes caused the same severe sickness and watery evacuations as castor oil, and at other times was inert, in doses of gutt. xxx. This want of uniformity in operation is a great drawback to its general employment as a purgative. The leaves in decoction, according to Dr. Wright(1) are often used with advantage in spasmodic bellyache, attended with vomiting; he adds that they sit more easily on the stomach than anything else, and seldom fail to act upon the bowels.

Jatropha multifida.

The second species, the *Jatropha multifida* of Linnæus, (Sp. Pl. p. 1429,) the *Curcas multifida* of Endlicher, the *Adenorhopium multifidum* of Pohl, is a native of South America, but is now quite domesticated in India, where it is commonly cultivated in gardens under the name of the *Coral bush*, from the coral-like appearance of its inflorescence. By the French it is designated *Petit medicinier*, or, *Medicinier d'Espague*. Its Eastern names are *Kattu nervalam*, (Tam.)

The seeds *(French Physic nuts, Avellanæ purgatrices)* are well described and figured by Guibourt(2) under the name of *Semences de Mediciner multifide*, and they are stated by Soubeiran(3) to be identical in composition with the preceding species; the action of *C. multifida*, however, appears to be more energetic, and death is said to have resulted from an over dose. Taken internally, in doses of three to five seeds, they act powerfully as a drastic purgative and emetic. Barham(4) states that the best mode of preparing them for administration is to roast them, to remove the outer skin and the embryo, and to steep them in Madeira wine, when it is said "they will purge well all gross humours." Lindley(5) states that the seeds are one of the best of all emetics and purgatives, acting briskly but without inconvenience, and that their effects are readily stayed by the administration of a glass of good white wine. I am at a loss to ascertain the authority on which this statement is based.

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(1) Med. Plant of Jamaica.
(2) Hist. des Droques Sunp. ii, p. 335
(3) Op. cit.
(4) Hort. Amer. p. 144.
(5) Flor. Medica, p. 185.

Jatropha glandulifera, and Jatropha glauca.
A'dalei, (Tam.)

Two other species, if indeed they are not identical, *Jatropha glandulifera*, Roxburgh (Flor. Ind. iii, p. 688,) and *Jatropha glauca*, (Vahl. Symb. 1, p. 79) are commonly found in Southern India, on the bunds of paddy fields, tanks, &c. They are each called *A'dalei* by the Tamuls, and *Nela-ameda* by the Telingees. The seeds yield a stimulant oil, which is employed as an embrocation in rheumatic and paralytic affections. Ainslie[1] makes no mention of its internal use, but in Travancore, I find on enquiry, that the oil obtained by coction, and the prepared seeds themselves, are employed as a purgative by the natives.

The root of *Janipha manihot*, Kth. the *Tapioca plant*, in its fresh state produces amongst other symptoms hypercatharsis, but it is not employed medicinally in this character, and is more properly ranged amongst the poisons.

Ricinus communis.
ارنڈي
Aranḍ.

The next plant of this Natural order which we have to consider, is so well known that any lengthened description of it in this place is uncalled for, viz., the *Castor oil plant, Ricinus communis* of Linnæus, (Sp. Pl. 1430; Roxb. Flor. Ind. iii, p. 689,) the *Ricinus albus, et ruber* of Rumphius, (Herb. Amb. iv, p. 92, t. 41.) the *Avanacu* or *Cit-avanacu* of Rheede, (Hort. Mal. ii, p. 57, t. 32,) and the *Arnd* of the Taleef Shereef (p. ii, No. 34.) Its Oriental names are *Eranda*, (Sans.) *Khiroa-cherna*, (Arab.) *Bed-injir*, (Pers.) *Aranḍ, Arindi*, (Hind.) *Bherunda*, (Beng.) *Khyroa*, (Turk.) *Avanacu*, (Mal.) *Sitamanakhu cheddie, Valakindu*, (Tam.) *Amudam chettu*, (Tel.) *Haralu urraloo*, (Canar.) *Kyet-hsoo*, (Burm.) *Endooroo*, (Cing.) *Dsharak*, (Javan. and Malay,) *Pi-ma, Ho-ma*, (Chin.) *Cay-du-dudeau*, (Coch.-Chin.) It was well known to the ancients, and has been identified with the κίκι or κρότον of Dioscorides,[2] and with the *Ricinus* of Pliny.[3] It is also supposed by some commentators to be the *Kikayon* of Scripture, (Jonah, iv, 6.) which in the English version is translated gourd.[4] The description given by Dioscorides of κίκι leaves no room to

(1) Ainslie Mat. Ind. ii, p. 6.
(2) Mat. Med. Lib. iv, cap. 164.
(3) Hist. Mat. Lib. xv, cap. 7.
(4) See an excellent article on this by Royle in Kitto; Cyc. of Biblical Literature ii, p. 203.

doubt its idenity. He describes the seeds as being called by some *Ricinus*, from their similarity to an insect so named by the ancients, the *Tick* of the present day; he also clearly describes the expressed oil, (κίκινον) which he states operates as a purgative and emetic.

In their raw or fresh state, the seeds, like those of other Euphorbiaceæ generally, possess acrid properties. Two or three of the seeds will operate as a violent cathartic. Berguis, as quoted by Orfila, says he knew a stout man who was attacked with profuse vomiting and purging after having masticated a single seed.(1) Lanzoni met with an instance where three grains of the fresh seeds, taken by a young woman, caused such violent vomiting, hiccup, pain in the stomach, and faintness, that for some time her life was considered in great danger. Mr. Alfred Taylor met with three cases of poisoning with castor oil seeds. Two sisters, who took each from two to four seeds, suffered severely; and a third, who took twenty, died in five days, with symptoms like those of malignant cholera. Climate, however, appears to affect their activity. Christison(2) states that he has known a person eat without any effect several seeds ripened in the open air in the neighbourhood of Edinburgh. Copious draughts of lime juice mitigate or remove any poisonous symptom. The root or bark of the root appears also to possess a purgative property. It was this part of the plant which was employed by Hippocrates,(3) and at the present day it is used in Travancore as a purgative in the form of infusion, about an ounce of the root being considered as a sufficient dose for a child, and double or treble that quantity for an adult; it is likewise administered in flatulence.

Castor oil seeds are at the present day chiefly valued for their oil, *(Castor oil, Oleum ricini,)* of which they contain a large portion. According to Geiger(4) they yield no less than 46 per cent. of their weight of oil. Of the three modes adopted for the extraction of the oil, expression, coction, and the action of alcohol, the first is most highly esteemed by British practitioners, and it is certain that it is vastly superior to the oil prepared by coction, being clearer, brighter, of a pleasanter taste, and less irritant in its operation. It

(1) Quoted by Marx, die Lehre von den Giften 1, 128.
(2) On Poisons, p. 590.
(3) De Nat. Muliel. Ed. Fæs. p. 573.
(4) Vol. et Arch. Dict. des Anal. Chim. ii, p. 252.

is very probable that the heat employed in the process of coction increases the solvent powers of the fixed oil, and hence that it contains a larger proportion of the acrid resinous principle than it would have done if no heat had been employed. With regard to the third process, the extraction of the oil by means of alcohol, this has been chiefly practised in France and Italy. It is asserted to be less disagreeable to the taste and more effective than the common oil, but more readily becomes rancid. According to M. Parola, an ethero-alcoholic extract, and an etherial or alcoholic tincture of the seeds, operate in much smaller doses than the oil, and with less disposition to irritate the bowels or to cause vomiting.*

Neither pressure nor alcohol suffice for the extraction of the whole of the active principle; the researches of M. Collond(2) demonstrate that after the seeds have been subjected to powerful pressure, and likewise after they had been exhausted of every thing soluble by boiling alcohol, the cake or mark which remains after each process retains powerful emetico-cathartic properties. The subject desires further investigation.

With regard to the medicinal uses and therapeutic applications of castor oil, nothing is required to be said in this place, they are too well known to require repetition, and may be found in detail in any systematic works on Materia Medica.†

All the preceding indigenous purgatives of this Natural order which we have enumerated, have a more or less well established character, and have for ages been employed both in Indian and European practice. The next to which we would call attention is a comparatively new one, the *Aleurites triloba* of Forster, (Roxburgh, Flor. Ind. iii, p. 629,) the *Camirium cordifolium* of Gartner, (De Fruct, p. 195, tab. 125, fig. 2,) the *Juglans camirium* of Lowreiro, (Flor. Coch. p. 573,) *the Camirium of* Rumphius. (Herb. Amb. ii, tab. 58.) This large handsome tree, often called by English residents *Belgaum*

Aleurites triloba.

اخروٹ

Akhrot.

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* Wood and Bache U. S. Disp. p. 540.

(2) Pharm. Journ. viii, p. 491.

† *Note.*— It is always desirable to be aware of the prejudices of the Natives, however absurd they may seem to us; hence it may be as well to mention in this place, that there exists amongst all classes of natives, Mus-

or *Indian Walnut tree*, exists not only in many parts of India, especially about Belgaum, but in the Malayan Peninsula, the Moluccas, the Friendly and Feejee Islands, Ceylon, &c. Its Oriental names are *Akhrot*, *Kukrot*, (Hind.) *Ukhrot*, (Beng.) *Kokuna*, (Cing.) *Akhrote*, (Mal.) *Camiri*, (Jav.) The kernels or seeds, which are regarded as stimulant and sudorific by the people of Northern India,(1) and as aphrodisiac by the Malays,(2) contain a very large quantity (from 50 to 60 per cent.) of a very pure oil, which, according to the Report of the Madras Drug Committee,(3) is superior to linseed oil, and likely to become important as an article of commerce. When obtained by expression it is very limpid, of an amber colour, tasteless, inodorous, insoluble in alcohol, easily saponifiable with alkalies, and very drying (siccative). Its medicinal properties have of late been examined by Dr. O'Rorke(4). He exhibited it in doses of one to two ounces, and found that it acted as a very mild and safe purgative, producing in from three to six hours after being taken free bilious coloured stools, unattended by either nausea, colic, or any other ill effects. Indeed in this respect it was found to differ from the oil of all the other Euphorbiaceæ, inasmuch as it acts as a simple purgative, its action being unattended by any degree of either nausea or vomiting. He regards the action of this oil as approximating to that of the fatty oils, but exercising a more stimulant action on the muscular coat of the intestines ; hence he considers that it is adapted to the so called bilious affections attended by torpor of the intestines. Both as a cholagogue and cathartic its operation is mild, and it appears to act successively on the whole length of the intestinal canal. It approaches nearly to castor oil in the mildness and certainty of its operation, but it is superior to it as possessing greater fluidity, as having neither taste nor smell, and as producing its purgative action without causing nausea, whether administered in emulsion or in a pure state. If further experience proves the correctness of Dr. O'Rorke's views, it is probable that this oil may soon hold a high place in the Materia Medica.

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sulmans and Hindus alike, *a very strong prejudice against taking or administering a dose of castor oil on a wet morning.* Taken under such circumstances they entertain a strong belief that it will cause convulsions, and if you endeavour to persuade them of the groundlessness of their fears, they will adduce numerous instances of their own experience in which such results have followed. Many respectable East Indians share in the belief.

(1) Irvine Mat. Med. of Patna, p. 51.
(2) Rumphius, Op cit.
(3) Mad. Med. Rep. 1855, p. 428.
(4) Ann. de Therap. 1859, p. 117.

In all the Euphorbiaceous plants which we have as yet mentioned, the active purgative principle has been found to exist, at least in the greatest intensity, in the fruit ; in those which we are next to notice, the true Euphorbia, it exists in the milky juice of the plant. It is the inspissated milky juice which constitutes the *Euphorbium* "*Euphorbii gummi*" of old writers.(1) It is a medicine of considerable antiquity. Dioscorides(2) describes its acrid properties, and many of the early Arabian writers speak of its virtues as a drastic purgative in dropsy and other affections. It has fallen into entire disuse in European practice, from the powerful character of its operation and the uncertainty of its effects ; but it still holds a place in the practice of the Mussulman doctors of India. It is the *Fir-fe-yoon* or *Fir-be-yoon,* (No. 1210,) and the *U-keil-nefseh* (No. 254) of the Ulfaz Udwiyeh.

It is yet undetermined what species yield this drug; formerly it was attributed to the *Euphorbia antiquorum* of Linnæus, (Sp. Pl. 646,) *the Schadid calli* of Rheede, (Hort. Mal. ii, p. 81, t. 43,) but that such is the case is denied by Hamilton,(3) and Royle,(4) at least as far as India is considered. It is a common plant throughout India, and is known by the names of *Sehund, Tidari,* (Sans.) *Zakoon,* (Arab.) *Nar-sij, Tedhara,* (Hind.) *Nara-sij,* (Beng.) *Shaddray callie,* (Tam.) *Bontajemmodoo,* (Tel.) *Schadid-calli,* (Mal.) *Sudu-sudu,* (Malay.) Like others of the same family, it abounds with a milky juice which is extremely acrid and irritant. Ainslie(5) informs us that this juice with sesamum oil, is used externally in rheumatism, and locally in toothache, and that when diluted, it is given internally in constipation connected with diseases of the spleen and liver. Rheede also mentions that on the Malabar Coast, the bark of the root, bruised, is taken in water as a purgative. In the Taleef Shereef (p. 105) it is stated to be pungent, and laxative, to increase appetite, to be an antidote to poisons, and to cure dropsy, affections of the spleen, marasmus, &c. The juice evidently possesses active purgative properties.

Euphorbia antiquorum.

تدهارا

Tidhārā.

(1) A long account of it will be found in Murray's Apparatus Medicaminum, Ed. 1787, vol. iv, p. 88.
(2) Mat. Med. Lib. iii, cap. 96.
(3) Trans. Linn. Soc. xiv.
(4) Illust. 1, p. 328.
(5) Mat. Ind. 1, p. 121.

Harris(1) states that in ostrich hunting in South Abyssinia, the hunter poisons his arrows with the juice of this plant, which does not make the meat injurious.

Euphorbia Nerriifolia.

تھوہر

Thūhar.

The *Euphorbia nivulia* of Buchanan, (Sprengel, Syst. iii, p. 787,) the *Euphorbia Neriifolia* of Linnæus, (Roxb. Flor. Ind. ii, p. 467,) *the Ella-cullie* of Rheede, (Hort. Mal. ii, p. 43,) is common in dry sterile sites in most parts of India. Its Eastern names are *Puttakarie, Sij,* (Sans.) *Sij,* (Beng.) *Thūhar, Ptoon,* (Hind.) *Yileikalli,* (Tam.) *Aku-jemudu,* (Tel.) *Ella-culli,* (Mal.) *Susuru,* (Jav.) *Daum-sudu-sudu,* (Malay,) *Paluk.* (Cing.) The juice of the leaves, which has a somewhat acrid taste, is stated by Ainslie(2) to be employed by native practitioners as a purgative and deobstruent, in those visceral obstructions and dropsical affections which supervene upon long continued intermittent fever, the dose being about a quarter of a pagoda weight. (13 grains.) According to Rheede (op. cit.) the bark of the root boiled in congee water and arrack, is employed by the people of Malabar as a remedy in dropsy. Horsefield also enumerates it amongst the indigenous cathartics of Java.

Euphorbia tortilis.

پیلي سینڈ

Peelie saynd.

Another species, *Euphorbia tortilis* of Rottler, is common in most parts of the Peninsula, where it is known by the names of *Peelie saynd,* (Duk.) *Tirrughu calli,* (Tam.) *Tirrughu jemenúdú.* (Tel.) Its milky juice is considered by the Hindu doctors as a very drastic cathartic, in doses of about two gold fanams weight, *i. e.,* about ten grains, in conjunction with palmyra jaggery. In its undiluted state it is highly acrid and caustic (Ainslie.)(3)

Embelica officinalis.

آملہ آنولا

Anolā āmlā.

Belonging to the same Natural order are the following plants, which have some repute amongst the natives as purgatives or aperients. 1, *Embelica officinalis* of Gærtner, (Wight's Icones, v, tab. 1896,) *Phyllanthus embelica* of Linnæus, (Roxb. Flor. Ind. iii, p. 671,) *Nelli-ca-marum.* (Rheede, Hort. Mal. 1, p. 69, t. 38.) It attains the size of a large tree, and extends

(1) Mat. Ind. ii, p. 97.
(2) Highlands of Acttiopia ii, p. 407.
(3) Ainslie Mat. Ind. ii, p. 425.

from Malabar, northwards to the banks of the Jumna. Its Eastern names are *Aňola, Anula, Amla,* (Hind.) *Amla,* (Beng.) *Nellie-kai-marum,* (Tam.) *Wusheri-kaia-mauno,* (Tel.) *Kattu karamba.* (Cing.) Its fruit constitutes the Embelic Myrobalans of old pharmacologists. In the fresh state they are very acrid and purgative, but by keeping, they lose these properties and become astringent. The yellow flowers of this tree, *Nellie poo,* (Tam.) *Wúsheri-kai poo,* (Tel.) *Anooli ka phul,* (Hind.) have an odour much resembling that of lemon peel, and are supposed by the Hindu doctors to be refrigerant and aperient, and in this character are prescribed in conjunction with other articles in the form of electuary, (Ainslie.)(1) We shall have to refer to the fruit again, both as an astringent and antiscorbutic.

A common weed during the rains in most parts of India is a small Euphorbiaceous plant, *Acalypha Indica,* (Linn. Roxb. Flor. Ind. ii, p. 675.) According to Rheede, (Hort. Mal. x, p. 163, tab. 82,) who mentions it under the name of *Cupameni,* the root bruised and taken in water, is cathartic, and the bruised leaves laxative. Its Eastern names are *Koohie ke-jurr,* (Hind.) *Mookto-joori,* (Beng.) *Kuppei-mene,* (Tam.) *Coopoo mayne,* (Can.) and *Kupamenya,* (Cing.)

Acalypha Indica.

كوہي كي جڑ

Koohie ke-jurr.

The next Natural order which requires notice, Cucurbitaceæ, contains many valuable purgatives. Upwards of 160 species exist in various parts of the East Indies. Of these, as possessing purgative properties, the following appear to deserve notice in this place.

The first in importance, its properties having been well ascertained by experience in European practice, is the true Colocynth plant, *Cucumis colocynthis* of Linnæus, (D. C. Prod. iii, p. 302; Roxb. Flor. Ind. iii, p. 719; Wight's Icones, ii, t. 498,) the *Citrullus colocynthis* of Schrader. Its Eastern synonyms are *Indrāvaruni, Vishala,* (Sans.) *Alhandla, Hnuzil,* (Arab.) *Hindivane tulkh,* (Pers.) *Bislambha, Indrain, Indrayan,* (Hind.) *Makhal,* (Beng.) *Peykumutti,* (Tam. and Mal.) *Putsakaia,* (Tel.) *Pitta commodoo,*

Cucumis (Citrullus) colocynthis.

اندرايں

Indrāyan.

(1) Mat. Ind. ii, p. 244.

(Cing.) This plant has a wide range, extending from Southern Europe and the Islands of the Mediterranean, throughout Turkey, Egypt, Syria, Abyssinia, Nubia, the greater part of India, to Japan; it is also found at the Cape of Good Hope. It is generally admitted to be the *κόλοκυνθὶς ἀγρία* of Dioscorides(1) and other Greek writers, and the *Colocynthis* of Pliny(2); and it is supposed to be the Wild Vine producing the Wild Gourd *(Pakkoth)* of Scripture.(3) It is the *Inderain* of the Taleef Shereef, (p. 19, No. 74,) and the *In-dera-yen*, (No. 306,) and the *Kunzil*, (No. 817,) of the Ulfaz Udwiyeh. In the last work, *Hud-uj* (No. 782) is given as the Arabian name of the dried fruit, and *Shehum-hunzel* (No. 1086) as that of the dried pulp.

The pulp of the dried fruit, *Colocynth* or *Coloquintida*, is the only part employed in medicine; it is of a dullish white or yellowish colour, without odour, but with a peculiarly nauseous, bitter taste; it is very tough, and is with difficulty reduced to powder. Very opposite statements have been made with regard to the seeds. De Candolle(4) speaks of them as bland, demulcent, and of an oily nature; and they are said by Capt. Lyon to form an article of diet in Northern Africa. Pereira, who cites these authorities, remarks that these statements do not apply to the colocynth seeds of commerce, which he never found devoid of bitterness; and he adds that Hillefeld(5) found a scruple of them purge a dog, and that Heise(6) found them poisonous. With regard to the seeds of the colocynth grown in Southern India, I have frequently tried various specimens, and found them uniformly bitter. The Travancore doctors express an oil from them, which they use as an anthelmintic.

The powdered pulp in doses of grs. iv—x, is a powerful drastic hydrogogue cathartic, but from its extreme acridity it is rarely given uncombined with carminatives. Its acridity depends upon its bitter principle, *Colocynthine*, of which it contains about 14 per cent. Although its action appears to be directed chiefly to the lower portion of the intestinal canal, on which it acts not only by stimulating the secretion, but by increasing the vermicular motion, it appears to act as a stimulant to the other abdominal viscera

(1) Mat. Med. Lib. iv, cap. 178.
(2) Hist. Nat. Lib. xx, cap. 8.
(3) 2 Kings, chap. iv, v. 59.
(4) Essie sur les Prop. Med. des Plantes, p. 191.
(5) Marx. Lehre v. d. Giften ii, p. 27.
(6) Ibid. p. 34.

generally, and not unusually causes an increase in the urinary secretion. That it exercises a specific influence on the intestinal canal is evident from the fact, that the pulp applied to an ulcerated or abraded surface, will act as a brisk purgative. M. Salgues,(1) indeed, proposes to employ it endermically. He directs 30 centigrammes of the finely powdered colocynth pulp to be applied to a blistered surface, and he states that by this means, may frequently be obtained "*un effet purgatif très prononcé.*" Its active principle is therefore absorbed, and Orfila mentions the case of a man, in whom the application of two drachms of the pulp to the cellular tissue of the interior of the thigh, caused death in 24 hours. Christison(2) quotes several cases in which fatal results followed its use in large quantities; in one of these, the intestines, on dissection, were found red, studded with black spots, and matted together by fibrinous matter; the usual fluid of peritonitis was effused into the abdominal cavity, the villous coat of the stomach was here and there ulcerated, and the liver, kidneys, and bladder, also exhibited traces of inflammation. The officinal compound extract, and compound Colocynth Pill in doses of grs. v—xv, are the most eligible forms for internal use; and to further obviate the tormina, nausea, and other ill effects, it may be combined with camphor, which is said to increase its purgative operation, whilst at the same time, its influence on the sentient nerves is greatly diminished. Henbane likewise modifies its operation on the bowels. It is sometimes employed in the form of enema. (Extract of Colocynth, ʒ ss; soft soap, ℥ i; water, Oi.) None of the preparations of colocynth are admissible in acute inflammatory affections of the stomach or bowels.

The two next species are closely allied, both in botanical characters and medicinal properties, to the preceding.

Cucumis pseudo-colocynthis.

a *Cucumis pseudo-colocynthis*, (Royle, Illust. vol. 1, p. 22, tab. 47, f. 2,) a native of the plains of Northern India, where it is called *Indrayan* and *Bisloombhee*. The fruit is similar in quality to colocynth, and is substituted in Northern India for the true article. O'Shaughnessy(3) states that on examining specimens of the *Bislombhee* and *Indrayan* from Delhi, he found

(1) Ann. de Therap. 1845, p. 154.
(2) On Poisons, p. 595.
(3) Beng. Disp. p. 345.

them to correspond in every respect with the description and characters of the true colocynth. There can be no doubt, he adds, that the real colocynth exists in the Doab and in Guzerat, and is called by the names applied by Dr. Royle to his *C. pseudo-colocynthis*, but it is equally evident that Royle's article is a peculiar species, perhaps more abundant than the genuine kind.

β Cucumis Hardwickii. (Royle, Illust. i, p. 220, tab. 47, fig. 3.) This species was found by Royle at the foot of the Himalayas, where it is called *Puharee Indrayun* or *Hill colocynth*, its name in the Kumaon mountains, where it was observed by Madden, is *Air-aloo;* the term *Indrain* (or *Indrayan)* being appropriated to *Trichosanthes palmata*. Its operation is purgative, similar to that of colocynth.

Cucumis Hardwickii.

پہاڑی اندرایں

Puharee Indrayan.

Belonging to the same Natural order is the *Luffa amara* of Roxburgh, (Flor. Indica, iii, p. 715; Wight and Arnott, Prod. i. p. 343,) the *Luffa plukenetiana* of De Candolle (Prod. iii, p. 302.) It is common in most parts of India, where it is known by the names of *Kerula,* (Hind.) *Tito-dhoondool,* (Beng.) *Sheti-beera.* (Tel.) Every part of it is extremely bitter; the fruit is violently cathartic and emetic, as are also the ripe seeds, taken either in infusion or in powder (Roxburgh.)

Luffa amara.

Kerula. (Hind.)

Another species, *Luffa bindaal,* (Roxb. Flor. Ind. iii, p. 717,) is a native of Northern India, where, it is well known by the Hindústani name of *Bindaal.* It is employed by the natives as a powerful drastic purgative in cases of dropsy. (Royle.) It is probably the *Bindaal* of the Taleef Shereef (p. 44. No. 216) to which Playfair has assigned no botanical name.

Luffa bindaal.

بندال

Bindaal.

A third species is *Luffa acutangula* of Roxburgh, (Flor. Ind. iii, p. 713; Wight and Arnott, Prod. i, p. 344,) *Cucumis acutangula* of Linnæus, (Sp. Pl. 1436,) the *Turai* of the Taleef Shereef, (p. 63, No. 322.) It is common throughout India, being much cultivated for the sake of its fruit, which enter largely into

Luffa acutangula.

جھینگا

Jhingā.

native curries. Its common names are *Tarvi-ghia*, (Arab.) *Jhinga tooroi*, (Hind.) *Jhingo*, (Beng.) *Beer-kai*, (Tel.) *Peekum kai*, (Tam.) *Peechenggah*, (Mal.) and *Tha-bwot-kha-wai*, (Burm.) The root, according to Rheede(1) is purgative. In the Mauritius, also where it is known by the name of *Papangaye*, the seeds have this character assigned to them. It is said that about fifteen seeds after being peeled, are sufficient to produce active purgation, and that they are a common remedy amongst the Creoles. They also excite vomiting. (Bouton.)(2) The account given of it in the Taleef Shereef (op. cit.) is lengthy but confused, and has reference more to its dietetical than its medicinal virtues.

The genus *Trichosanthes*, belonging to this order, contains a few plants possessed of purgative properties; of these we may mention *Trichosanthes dioica* of Roxburgh, (Flor. Ind. iii, p. 701,) the *Pulwul* of the Taleef Shereef, (p. 41, No. 193,) *Pulvul*, (Hind.) *Bun-putol*, (Beng.) It is commonly cultivated in Bengal and other parts of India for the sake of its unripe fruit and tender tops, which are much eaten by the Natives in curries, and are reckoned very wholesome. It is characterised by Revd. J. Long(3) as a useful purgative, and O'Shaughnessy(4) describes the alcoholic extract of the unripe fruit as a powerful and safe cathartic, in doses of three to five grains, repeated every third hour till the desired effect is produced. According to Prof. H. H. Wilson(5), the oldest writers on Hindu Medicine placed much confidence in this plant in the treatment of leprosy.

Trichosanthes dioica.

پلول

Pulvul.

Trichosanthes laciniosa of Klein, (Wild. Sp. Pl. iv, p. 601,) and *Trichosanthes cucumerina* of Linnæus, (Roxb. Flor. Ind. iii, p. 702,) are considered by Wight and Arnott (Prod. i, p. 350,) to be simply varieties of the same plant. Both have purgative properties assigned to them. Speaking of *T. laciniosa*, Ainslie(6) states that the tender shoots and dried capsules are a very bitter aperient, and are reckoned amongst the stomachic lax-

Trichosanthes laciniosa and T. cucumerina.

(1) Hort. Mal. viii, t. 6.
(2) Med. Plants of Mauritius, p. 63.
(3) Journ. Agri-Hort. Soc. of India, 1858, vol. x, p. 4.
(4) Beng. Dispensatory, p. 351.
(5) Trans. Med. Phys. Soc. of Calcutta i, p. 42.
(6) Mat. Ind. vol. ii, p. 296.

ative medicines of the Tamuls, who prescribe them in infusion to the extent of two ounces twice daily. He adduces *Patota*, (Sans.) *Chaynd-polla*, (Tel.) and *Pepoodel*, (Tam.) as its Eastern synonyms. The Burmese know *T. cucumerina* by the name of *Tha-bwot-kha*.

The Natural order Convolvulacea, to which we next direct our attention, is rich in purgative yielding plants. The *Ipomœa jalapa*, which yields the officinal jalap, and the *Convolvulus scammoni*, the source of the well known scammony, belong to this family. Some of the species indigenous in India, though not of such established repute in Europe as the two just named, are possessed of no mean value as cathartics. We may instance the following.

Ipomœa turpethum.

Turbad or Turbid.

The Ipomœa turpethum of R. Brown, (Prod. p. 489,) the *Convolvulus turpethum of* Linnæus, (Sp. Pl. p. 221,) and Roxburgh, (Flor. Ind. 1, p. 476,) *the Spiranthera turpethum* of Bojer. (Hort. Maurit. p. 226.) Excellent plates of this plant will be found in Wight's Illustrations, Suppl. t. 38; Botanical Magazine, t. 2093, and Ker's Bot. Register, t. 279. This twining plant has a wide range, being found not only in many parts of the East Indies, but also in Ceylon, the Malayan Archipelago, New Holland, the Friendly Islands, Otahetie, &c. Its Eastern names are *Trivrit, Teori, Triputa*, (Sans.) *Turbud, Turbad*, (Arab. and Pers.) *Turbad or Turbid, Niswit*, (Hind.) *Teooree, Trivrit*, (Beng.) *Shevadi or Sivadi kodie*, (Tam.) *Tella-tagada*, (Tel.) *Trasta-wala*, (Cing.)

Its root *(Radix turpethi)* called by old writers *Vegetable turpeth*, to distinguish it from the old *Mineral turpeth, (the Yellow sulphate of Mercury)*, has from the earliest ages been in use as a purgative in the East, Avicenna, (Lib. ii. 2, 557.) Serapion, (De Simpl. 337) Halay Abbas, (Pract. ii, 2. 557,) Mesue the younger, (De Simpl. ii,) and other Orientals, notice it, but it appears to have been unknown to the Greek and early Roman writers. (See Adam's Comment on Paulus Ægineta, iii, p. 445.) By some it has been erroneously identified with the *Tripoilum* of Dioscorides.

Though it has fallen into disuse in European practice, it still continues a favourite purgative in the East, both amongst Hindus and Mussulmans. Roxburgh (op. cit.) has a long note on the medicinal virtues of this root, and adduces the experience of Drs. Wallich, Glass, Gordon, and others, in its use.

Dr. Gordon speaks of it in the following terms. "The roots are long, branchy, somewhat fleshy, and when fresh, contain a milky juice, which quickly hardens into a resinous substance, altogether soluble in spirits of wine. The milk has a taste at first sweetish, afterwards slightly acid, the dried root has scarcely any perceptible taste or smell. It abounds in woody fibres, which, however, separate from the more resinous substance in pounding, and ought to be removed before the trituration is completed. It is in fact in the bark of the root that all the purgative matter exists. The older the plant the more woody is the bark of the root, and if attention be not paid in trituration to the removal of the woody fibres, the quality of the powder obtained must vary in strength accordingly. It is probably from this circumstance that its character for uncertainty of operation has arisen, which has occasioned its disuse in Europe. An extract, which may be obtained in the proportion of one ounce to a pound of the dried root, would not be liable to that objection. Both are given in rather larger proportion than jalap. Like it, the power and certainty of its operation are very much aided by the addition of cream of tartar to the powder, or of calomel to the extract. The powder in this form has been found to operate with a very small degree of tenesmus, and very freely, producing three or four motions within two or four hours. It is considered by the natives as possessing peculiar hydrogogue virtues, and it has been used with decided advantage in the first stages of febrile affections. O'Shaughnessy,(1) however, states that he subjected it to careful clinical experiment, and he feels warranted in asserting that it is so extremely uncertain in its action that it does not deserve a place in the Pharmacopœia. It would have been more satisfactory if some of the observations on which this statement is based had been given in detail. The dose in powder is ʒ ss.—ʒ i. of the root, in infusion ʒ ii.—ʒ iii. of the extract grs. x, ϑ i.

The root, on analysis by Boutron, Charlard,(2) was found to contain resin fatty matter, volatile oil, vegetable albumen, starch, yellow colouring matter, the oxide of iron, (a trace) salts, and woody fibre.

Two other indigenous species of Ipomæa have purgative properties assigned to them.

(1) Bengal Disp. p. 504.
(2) Jour. de Pharm. viii, p. 121.

Ipomœa reptans of Poiret (D. C. Prod. ix, p. 349.) *Ipomœa repens* of Roth, (Nov. Spec. p. 110,) *Convolvulus reptans* of Linnæus, (Sp. Pl. 225,) *Convolvulus repens* of Willdenow, (Roxb. Flor. Ind. ii, p. 68,) *Olus vagum* of Rumphius (Herb. Amb. v, p. 419, t. 155, f. 1,) and *Ballel* of Rheede. (Hort. Mal. xi, p. 107, t. 52.) It is chiefly found on sandy shores near the sea coast, not only in the East but also in the West Indies. Sloane,(1) speaking of the West Indian plant, describes it as a hydrogogue purgative, serviceable in dropsical cases, administered either in powder or with broth ; but he adds that its operation is strong, and consequently unsuitable for persons in a weak state. Descourtils(2) likewise states that in the West Indies the juice is employed in doses of gutt xx—xxx, combined with other aperients or some preparations of iron, in the treatment of affections of the liver. The natives of India use the tender tops and leaves, when cooked, as a pot herb.

Ipomœa reptans.

كلمي

Kalmi.

The second species is the well known *Ipomœa* (*Convolvulus*) *pes caprœ, the Goat's foot creeper* or *Sea bind weed,* which is one of the most common sand-binding plants in most portions of the tropical portions of both hemispheres. Its Eastern names are *Dapatee lata,* (Hind.) *Ch'hagul khoori,* (Beng.) *Penlay ka zoon,* (Burm.) *Schovauna adamboe,* (Mal.) *Balabunda tiga, Choula pillar tiga.* (Tel.) Its long milky root is a strong purgative,(3) and is employed in this character in Brazil.(4) According to Plumier,(5) the inspissated juice constitutes a kind of scammony, bitter and nauseous to the taste, and purgative in doses of grs. xii,—xiv, conjoined with an equal quantity of the Bitartrate of Potash.

Ipomœa pes caprœ.
Dapatie lata, (Hind.)

Neither of these two last named species appears to be employed as a purgative by the people of India ; but considering the family to which they belong, they may merit further attention.

Closely allied to the foregoing is the *Batatus paniculata*

(1) Nat. Hist. of Jamaica i, p. 156.
(2) Flor. Med. Des. Antilles ii, p. 317.
(3) Browne Hist. of Jamaica, p. 153.
(4) Martin's Mat. Med. Bras. p. 79.
(5) Plant. Amer. p. 89.

Batatas paniculata.
Bhooin Koomra.
(Hind. and Beng.)

of Choisy, (D. C. Prod. ix, p. 339,) *Convolvulus paniculatus* of Linnæus, (Sp. Pl. p. 223,) *Ipomœa paniculata* of R. Brown, (Prod. p. 486,) the *Pal moddecca* of Rheede. (Hort. Mal. xi, p. 101, t. 49.) It has numerous other botanical synonyms. Good figures of it will be found in Sims' Bot. Mag. t. 1790, in Andrew's Bot. Repository, t. 635, and in Ker's Bot. Register, t. 75. It is common throughout India, and is known by the names of *Vidaree*, (Sans.) *Bhooin, Koomra*, (Beng. and Hind.) *Matta-pal-tiga*, (Tel.) and *Ka-zwoon*. (Burm.) Its root, which is large and tuberous, is cathartic, and as such is used by the natives of the localities in which it grows. (Roxburgh.)

More important than either of the preceding is the *Pharbitis nil* of Choisy, (D. C. Prod. ix, p. 243,) *Pharbitis cærulea* of Wallich, *Convolvulus nil* of Linnæus, (Sp. Pl. 219,) *Ipomœa cærulea* of Roxburgh, (Flor. Ind. ii, p. 91, Ker. Bot. Reg. iv, tab. 276,) and *Ipomœa nil* of Roth. (Cat. Bot. 1, p. 36.) Its Eastern names are *Kālā-dana, Mirchi*, (Hind.) *Neel kulmee*, (Beng.) *Bounra*, (Kumaon.) *Kolli*, (Tel.)

Pharbitis nil.

كالاڈانه

Kālā-dana.

This ornamental species, with its delicate blue flowers, extends over the greater part of Asia, and has been likewise introduced into the tropical portions of the Western hemisphere. The ripe seeds, *Kub-ul-nil*, (Arab.) *Kaladana*, (Hind.) have been proved to possess valuable cathartic properties. They are black, angular, weighing on an average half a grain each, in powder of a grey colour, of sweetish and subsequently rather acrid taste, and heavy smell. On analysis they yield resin, gum, starch, fixed bland oil, fibre, and colouring matter. The powdered seeds, in doses of 30 to 40 grains, act as a quick, safe, and pleasant cathartic. In 100 cases in which it was exhibited in the Police Hospital at Calcutta, it proved purgative in 94, occasioned vomiting in 5, and griping in 15, and produced on an average five stools within two hours and a half; the operation generally commenced in an hour, and was not in any instance delayed beyond four hours. The alcoholic extract, which consists of resin and oil, is deep brown, ductile, of excellent consistence, and keeps for several months. In 10 grain doses it produces all the effects of jalap, with certainty and speed

the taste is scarcely perceptible. Such is the experience of O'Shaughnessy,(1) to whom we are indebted for the introduction of this medicine.

Dr. Kirkpatrick(2) after employing this seed in between 500 and 600 cases, reports it a very valuable, safe, and certain purgative, intermediate in strength between rhubarb and jalap. He advises that the seeds should be boiled in water for three minutes, dried and reduced to a very fine powder, and given in one drachm doses. It should, he adds, be conjoined with a little ginger or omum water, and may be combined with cream of tartar like jalap; it is not, however, so apt to nauseate as the latter, and is not quite so active, though equally certain in its operation. To this we may add that the Madras Drug Committee reported very favourably of it, stating their opinion that the alcoholic extract is a safe and manageable cathartic, that the seeds are always procurable in the bazaar at a very cheap rate, and that the powdered seeds, being free from the nauseous taste and smell of jalap, give it some superiority over the latter article(3).

These statements confirm O'Shaughnessy's opinion, (op. cit.) that with this indigenous remedy the practitioner in India is independent in every respect of imported jalap, to which it is equal as a cathartic, and superior in portability and flavour.

The following formulæ are directed in the Bengal Pharmacopœia; 1, *Extract of Kaladana*; Powdered Kaladana seeds q. s. moisten with rectified spirit, exhaust the powder by percolation, distil off three-fourths of the spirit, and evaporate the rest on a water bath to a soft pillular consistence. Dose grs. 5 to 10.—2, *Tincture of Kaladana*; K. seeds bruised, 8 ounces; Proof spirit, two pints; prepare by percolation, or boil in half the spirit for 20 minutes, replacing what may be lost by evaporation, strain, and mix the rest of the spirit with the strained liquor. Dose, one to two drachms. —3, *Compound powder of Kaladana*; K. seeds finely powdered, Bitartrate of Potash of each, three ounces, Ginger two drachms. Dose grs. xx—xl.

Several plants of the large and widely diffused Natural order Leguminosæ are purgatives of established reputation. Of these the best known are the species of Cassia, which

(1) Beng. Disp. p. 505.
(2) Cat. of Mysore Drugs, No. 467.
(3) Madras Med. Reports 1858, p. 423.

yield the varieties of senna of commerce. Although one species at least, viz., *Cassia obovata* of Colladon, (Hist. des Cafes, p. 92,) the *C. Burmanii* of Wallich, is indigenous in many parts of South India, and although its leaves possess undoubted cathartic properties, yet it is from an exotic or imported species, *C. lanceolata* or *C. elongata*, that the so called Indian or Tinnevelly senna is obtained. Roxburgh, indeed, asserts that it is a native of the interior of India, and Graham(1) describes it as indigenous in Guzerat about Dholka; yet we find that Royle,(2) raised the senna plant at Saharunpore from seeds collected out of parcels of *Suna mukki*, or senna imported from Arabia into Calcutta, and it appears probable that the Tinnevelly senna was in the first instance raised by Mr. Hughes from imported seed. Some excellent practical remarks on the culture and preparation of Senna in India are published by Dr. Wight, in the Madras Journal of Literature and Science.(3) Tinnevelly senna being now an established article of the Materia Medica, it is needless in this place to enter on the consideration of its medicinal properties and therapeutic uses. Some few other species of Cassia require a brief notice.

Cassia obovata and other Senna yielding Cassias.

Cassia tora of Linnæus (Sp. Pl. 538, D. C. Prod. ii, p. 340—495,) *Senna tora* of Roxburgh, (Flor. Ind. ii, p. 340,) *Tagera* of Rheede, (Hort. Mal. ii, p. 53,) is a common Indian plant. *Chakwaṅr* or *Chakour*, (Hind.) *Tagara*, (Tam.) *Tante puchettu*. (Tel.) Its mucilaginous and fetid smelling leaves are gently aperient, and are given in decoction in febrile affections of children during dentition. (Ainslie.)(4)

Cassia tora.

چکوندا یا چکونر

Chakwaṅr.

2. *Cassia sophera* of Linnæus, (Sp. Pl. 543,) *Senna sophera* of Roxburgh, (Flor. Ind. ii, p. 347,) *Ponnam tagera* of Rheede, (Hort. Mal. ii, p. 101,) *Kasaundī*, (Hind.) *Kalkasoonda*, (Beng.) *Punavarie*, (Tam.) *Pydutangedu*, (Tel.) a low growing shrub of most parts of the East. The leaves, which have a fetid disagreeable

Cassia sophera.

کسوندی

Kasaundī.

(1) Cat. of Bombay Plants, p. 62.
(2) Mat. Med. p. 358.
(3) 1837 April, p. 358.
(4) Mat. Med. ii, p. 405.

odour, are stated by Horsefield(1) to be mildly cathartic. According to Rheede, (op. cit.) the leaves in decoction are administered by the people of Malabar, in jaundice and febrile affections, doubtless, with the view of obtaining their aperient effect.

3. *Cassia alata* of Linnæus, (Sp. Pl. 541,) *Senna alata* of Roxburgh, (Flor. Ind. ii, p. 349,) *Dād mardan* or *Daād-murden*, (Hind.) *Simie-agati*, (Tam.) is a large showy species throughout the tropical portions of both hemispheres. The leaves, in infusion or decoction, are said to act as a purgative, and in this character they are in use by the people of Panama, who know the plant by the name of *Lauremo*.(2)

Cassia alata.

دادمردن

Dād-mardan.

These three last named species enjoy also great repute as external applications in cutaneous diseases, and will be further considered hereafter.

Another well known purgative plant of this Natural order is the *Cathartocarpus fistula* of Persoon, (Ench. i, p. 459,) the *Cassia fistula* of Linnæus, (Sp. Pl. 540, Roxb. Flor. Ind. ii, p. 333,) the *Conna* of Rheede, (Hort. Mal. i, p. 37, tab. 22,) the *Amaltas* of the Taleef Shereef. (p. 17, No. 68.) Its Oriental names are *Sauvernaca Soovarunka*, (Sans.) *Khyar*, *Shimbar*, (Arab. and Turk.) *Phuloos*, (Pers.) *Amaltas*, *Kurwara*, (Hind.) *Sonaloo*, *Banur latigachh*, (Beng.) *Konnei*, (Tam.) *Rela*, *Rayla,-kaia*, (Tel.) *Cay-kay*, (Kanar.) *Conna*, (Mal.) *Gun-gyee*, (Burm.) *Aehaha*, *Aehœlaghas*, (Cing.) *Mentus*, (Malay.) *Toonggooli*, *Drangooli*, (Javan.) It is not to be confounded with the *Cassia fistula*, of the ancients, as by this name they designated those kinds of cassia or cinnamon which they received rolled up into fistulæ or pipes.(3) This elegant tree, the long racemes of gaudy yellow flowers of which justly entitle it to the name of "the Laburnum of the Tropics," is found in most intertropical parts of both hemispheres. It is chiefly valued for the sake of its pods, which contain a considerable quantity of black shining pulp, of a sweetish mucilaginous taste, and rather sickly odour. According to the analysis

Cathartocarpus fistula.

املتاس

Amaltas.

(1) Journ. Asiat. Soc. vii, p. 493.
(2) Seeman in Hooker's Kew Garden Mix. iii, p. 264.
(3) See Adam's Commentaries on Paulus Ægineta Syd. Ed. vol. iii, p. 161.

of Henry,(1) it contains no less than 61 per cent. of sugar, and 6-7 of gum, besides colouring matter, gluten, &c.

Cassia pulp proves mildly laxative in doses of about ʒ ii, whilst it operates as a pretty active purgative when the dose is increased to ℥ i—℥ ii; but in these quantities it is apt to produce griping and flatulence. It is rarely given alone, but is usually conjoined with manna, the purgative effect of which it is said greatly to increase. The officinal Confectio Cassiæ is a good form for internal use, (Prepared Cassia lb. ss. Manna ℥ ii, Tamarind Pulp ℥ i, Syrup of Roses ℥ viii) in doses for adults ʒ ii—℥ i. As a general rule cassia pulp may be safely employed as an aperient for children and old persons, in the treatment of habitual constipation, and in other diseases where aperients are indicated; but it appears inadmissable where the patient is subject to flatulent colic, or where dyspepsia, characterised by debility of the digestive organs, is present. Many old writers, including Avicenna, Lösecke, Lewis, Boerhaave, and others,(2) speak of the effect of cassia pulp taken internally as communicating a green, or dark brown colour to the urine, but the fact was denied by Gmelin, Bergius, and later writers. The only modern authority who has mentioned the subject is Dr. Wight,(3) who advises that patients who take this remedy habitually as an aperient should be made aware of its colouring the urine of a dark brown colour, as in his own practice, he adds, some patients have refused to continue its use on the supposition, from the deepened colour of the urine, that it has a tendency to heat the system, and excite a bilious habit, even though at the same time they were otherwise deriving benefit from its use.

In addition to the pulp, medicinal properties have been assigned to other parts of this tree. The seeds are said to be purgative in doses of ʒ iv.—ʒ vi. (Colladon op. cit. p. 76) Similar properties have been assigned to the leaves,(4) and it has been said that the flesh of animals which feed upon them acquires a purgative property; but as Dujardin(5) justly remarks, the tree is generally too high to allow of animals feeding upon it.

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(1) Ann. de Chim. Med. vi, p. 275.

(2) See Murray's App. Medicaminum, vol. ii, p. 513.

(3) Illust. of Indian Bot. i, p. 195.

(4) Taleef Shereef, p. 17.

(5) Droques, p. 193.

Tamarindus Indicus.

املي

Amlī.

Very nearly allied to cassia pulp in its medicinal properties and uses is the sweetish acid pulp of the tamarind, *Tamarindus Indicus* of Linnæus, (D. C. Prod. ii, p. 488,) the *Balam-pulli* of Rheede, (Hort. Mal. i, t. 23,) the *Amli* of the Taleef Shereef, (p. 16, No. 63.) It is common throughout the tropics, and in the East is known by the following names. *Tintri, Tintiree,* (Sans.) *Temrhindee,* (Pers. and Arab.) *Amli, Amlie,* (Hind.) *Amlī, Tintooree, Tinti, Tentool,* (Beng.) *Chinta, chetu,* (Tel.) *Poolie,* (Tam.) *Mag-gee,* (Burm.) *Look-ma-kam,* (Siam.) *Asem,* (Javan.) *Asam-jawa,* (Mal.) *Hyabila, Mabasi-ambala.* (Cing.) The pleasantly acid pulp is a mild laxative; it is, however, rarely administered alone, but in conjunction with senna, manna, &c. It is thought to moderate the action of some of the resinous carthartics, but this is doubtful. Bontius(1) speaks of its being very useful in dysentery and cholera. It has been praised by Aublet(2) as an antiscorbutic, under which heading it will be further considered. Aperient properties are also assigned in the Taleef Shereef(3) to the flowers of the tamarind tree; and Burman(4) states that in the form of conserve they prove useful in affections of the stomach, liver, and spleen.

Alhagi maurorum.

جواسا

Jawāsā.

The next Leguminous plant which calls for notice is the *Alhagi maurorum* of Tournefourt, (D. C. Prod. iii, p. 253,) the *Alhagi manifera* of Desvaux, the *Hedysarum alhagi* of Linnæus. (Sp. Pl. 1053, Roxb. Flor. Ind. iii, p. 344.) It is an erect thorny shrub, inhabiting Egypt, Syria, Mesopotamia, and Scinde; also the banks of the Jumna and Ganges in Upper India, Guzerat, and the south Maharatta country. Its Eastern names are *Yasa, Yavasa,* (Sans.) *Jawāsā, Javansa, Ooshturkah,* (Hind.) *Juvasa,* (Beng.) It deserves notice in this place as yielding a kind of manna called in Arabic *Toorunjbeen,* which is imported into India from Cabul and Khorasan. It has been thought by some to be the manna of the Old Testament, but this is more than doubtful, as it is stated to have been produced in

(1) Diseases of India, &c., p. 201.
(2) Plant Guian, p. 24.
(3) Op. cit.
(4) Thes. Zeylan, p. 222.

abundance for millions where hundreds cannot now be sustained.(1) The substance *Toorunjbeen* or *Manna of the Desert*, as it is sometimes called, occurs in small, round, unequal grains, the size of coriander seeds, of yellowish or white colour, caking together and forming an opaque mass, in which are found portions of the thorns and fruit of the plant; it is inodorous, with a saccharine taste, followed by slight acridity. As a medicine, its effects correspond to those of the Ash manna. No good analysis of it has been made. (Beng. Disp. p. 296.) In the Taleef Shereef (p. 72.) *Janansa* is described as cool, light, and aperient, useful in bilious disorders.

Tamarix gallica, var. Indica.

جھاؤ

Jhā'ū.

Though not belonging to the same Natural order, this seems an appropriate place to notice another Indian Manna bearing plant. *Tamarix gallica*, var. *Indica*, Ehrenb, (Wight's Illust. i, t. 24. Roxb. Flor. Ind. ii, p. 100.) It is a small shrub *Jhā'ū*, (Hind. and Beng.) found chiefly on the banks of the Indus, Cutch, and Scinde, the banks of the Jumna and Ganges, and on the Coromandel Coast. It yields a species of manna called *Arabian Manna*, or *Manna of Mount Sinai*. It is the *Guz-ungu-been* of the Ulfaz Udwiyeh (No. 1296). Prof. Royle(2) mentions that five kinds of manna are met with in India; 1, the best, called *Sheerkhisht*, is said to be procured from a tree in Khorasan, probably belonging to the Oleaceæ. 2, *Toorunjbeen*, the produce of *Alhagi maurorum*. 3, *Guzunjbheen*, of a *Tamarix*. 4, *Shukhr-ool ashur* of *Calotropis procera*; and 5, one kind obtained from an Umbelliferous plant.(?) Manna is rarely employed by the Hindu doctors, but the Mussulmans understand its use, and prescribe it as a laxative. It is very rarely obtainable in the bazaars of Southern India, and then of a very inferior quality.

Clitorea ternatea.

اپراجتا

Aparājitā.

The next Leguminous plant in our list is the *Clitorea ternatea* of Linnæus, (Roxb. Flor. Ind. iii, p. 321,) the *Flos cœruleus* of Rumphius, (Herb. Amb. v, p. 56, tab. 31,) the *Apurjeeta* of the Taleef Shereef (p. 7, No. 17.) It is a well known elegant creeper,

(1) See Kitto Cyc. of Biblical Lit. vol. ii, p. 293. An excellent paper by Dr. O'Rorke on the Manna of the Hebrews, identifying it with the *Lichen esculentus* of Pallas will be found in the Pharmaceutical Journal, Sept. 1st 1860, p. 169, from Journ. de Pharm. et de Chimie, June 1860.

(2) Illust. i, p. 267.

constantly found in gardens, and valued for the sake of its ornamental blue flowers. Its Eastern names are *Aparajita*, (Sans.) *Aparajita, Kawwathenthi, Neelaghiria*, (Hind.) *Neeluparajita, Blue var, Shwet uparajita, White var*, (Beng.) *Karkakartan codie*, (Tam.) *Nulla-ghenatnacodie, Nulla dintena*, (Tel.) *Shlongo-kuspe, Shunkú-pushpa*, (Mal.) *Oung mai-phyoo*, (Burm.) *Katarodu*. (Cing.) There are two varieties, one with white and the other with blue flowers; the former is supposed to possess the greatest amount of medicinal activity. Burman, in his Thesaurus Zeylanica (Ed. 1737 p. 100) is the first writer I have met with, who distinctly mentions the aperient properties of the seeds. In doses of two drachms, he states that they prove gently laxative. The Madras Drug Committee state that favourable accounts of the efficacy of *Clitorea* seeds as a purgative have been received by them, but it having been discovered, that by mistake, the seeds of *Pharbitis nil* had been supplied by the Commissariat, on one occasion at least, they exercise a wise discretion in deferring to publish the opinion which they had formed. The root appears likewise to partake of this property. O'Shaughnessy(2) found that the alcoholic extract of the root, in doses of 5—10 grains, acted as a brisk purgative. But griping and tenesmus were so often produced during its operation, the patient, at the same time, being feverish and uneasy, that, he adds, he cannot recommend its employment.

Poinciana pulcherima.

کرشن چرن

Krishna charan.

The last indigenous Leguminous plant which we shall specify is the *Poincianna pulcherima* of Linnæus (Sp. Pl. 544, Roxb. Flor. Ind. ii, p. 355,) a handsome flowering shrub common in gardens, and known to English residents by the name of *Barbadoes or Peacock's Pride*, and *Barbadoes Flower fence*. Its Oriental synonyms are *Krishna-choora*, (Sans.) *Krishna charan*, (Beng. and Hind.) *Gul-i-turra*, (Pers.) *Komri*, (Tam.) *Doung-souk*, (Burm.) *Monara-mal*, (Cing.) It does not appear to be employed in the East as a purgative, but it is so in tropical America and the West Indies, whither it has been transplanted with great success. Thus Martins,(3) speaking of the plant as grown in Brazil, states that the

(1) Madras Med. Reports 1855, p. 423.
(2) Beng. Disp. p. 315.
(3) Mat. Med. Bras, p. 75.

leaves produce a cathartic effect approaching to those of *Colutea arborescens;* and he adds that horses and mules which eat them are liable to be attacked with colic and dysentery. Dr. Barham(1) states that Sir Hans Sloane classed it with the Bastard sennas; indeed, he adds, that when dried and old it is very difficult to distinguish one from the other, and as for virtues, he states that it possesses the same as those of the Alexandrian senna: as the plant is very common in India, it may be worth further trials. Lunan(2) states that the powdered seeds, in doses of a drachm, give more ease in dry bellyaches, more so indeed than opiates or any other known medicine, being not in the least unpleasant to the taste, giving quick relief, and making way for gentle laxatives to be administered.

We must now direct our attention to the Rhubarb yielding plants of India. These, which belong to Natural order Polygonaceæ, are confined, as far as we at present know, to the mountainous regions of the Northern portions of the Continent, and may be classed as follows.

Rheum emodi and other Rhubarb yielding species.

1. *Rheum emodi*, Wallich, Cat. E. I. Herb. No. 1727; Hooker, in Bot. Mag. t. 3508; Lindley, Flor. Med. p. 354. *D. Australe*, Don. Prod. Flor. Nepal, p. 75. This species is found on the Himalayas to 16,000 feet elevation (Gerard) as far as the confines of Tartary (Webb.), Ladak 37° N. Lat. (Moorcroft), Kumaon to 10,000 feet in 31° to 40°. N. Lat. (Blinkworth), Gosaingo and in Nepal. (Wallich.)

2. *Rheum Moorcroftianum*, Royle, Illust. p. 318; Wallich, op. cit. No. 1727, "*Small stalked Rhubarb*" inhabiting the Niti Pass in the Himalayas, at 12,000 feet elevation. Roots called *Dooloo* in Bootan.

3. *Rheum spiciforme*, Royle, Illust. p. 318, t. 78; found on the Northern face of the Himalayas, at Kherang Pass and several places beyond.

4. *Rheum Webbianum*, Royle, Illust. p. 38; *R. emodi*, Meisner, in Wallich Plant. Asiat. Rar. iii, p. 65. (not Wallich.)

These four species are supposed to yield the greater portion, if not the whole of that variety of Rhubarb which is so well described by Pereira(3) under the name of *Himalayan rhubarb, Radix rhei Himalayanensis, Radix rhei Indici.*

(1) Hort. Americana, p. 16.
(2) Hort. Jamaicensis, i, p. 52.
(3) Mat. Med. ii, p. 1353.

This author considers that what he terms the larger Himalayan rhubarb is the product of *R. emodi*, whilst the smaller variety is that of *R. Webbianum*. It is the latter kind apparently that Twining, quoted below, employed in his experiments, although it should be observed that Twining himself mentions that he employed the root of "*Rheum emodi* of Wallich."

Twining, in his work on the Diseases of Bengal,(1) remarks that the root of the *R. emodi* is remarkable on account of its loose structure compared with the rhubarb of commerce. The powdered root is described as of a brownish colour, possessing less of the peculiar aroma of *R. palmatum*, and being more astringent to the taste, leaving a strong flavour on the tongue, similar to that of bitter almonds. It tinges the urine, when administered internally, of a very deep colour; it is less disagreeable to take than Turkey rhubarb, less efficacious in large doses as a purge, very rarely producing griping, but much more effectual as a tonic and astringent in the cure of intestinal profluvia. He adds (p. 221) that he knows of no remedy which has proved so useful in the treatment of chronic diarrhœa, when that disease is accompanied by enlarged spleen. The most obvious effects of this remedy are a gradual but prompt decrease of the purging, and an improved appetite and digestion, without any heat or febrile symptoms. The dose is five grains, twice a day. In cases where there is much debility, great benefit is derived from administering some of the decoction or extract of Goluncha *(Cocculus cordifolius)* in the middle of the day, at the same time that five grains of the powdered Rheum emodi are given night and morning. In the Third volume of the Trans. of the Med. and Phys. Society of Calcutta (p. 443.) Mr. Twining details 43 cases in which this drug was administered; the results are very similar to the remarks quoted above. He adds that in doses of ℈ i. to 3 ss.(2) it has a good purgative effect, operating three or four times nearly as freely as the best Turkey rhubarb. It is probably the *Rewind* of the Taleef Shereef, p. 89, No. 520.

For further information on this species of rhubarb consult Don in Jameson's Journal, March 1829, Edin. Med. and Phys. Journ. No. 96, July 1823, p. 168; Nees et eber, op. cit. and in Journ. de Pharm. 1827, vol. xiii, p. 344; Royle's

(1) Vol. ii, p. 220.

(2) By a typographical error in the Bengal Dispensatory (p. 519) the dose is placed at two or three drachms.

Journ. Asiat. Soc. of Calcutta, No. 2, Feb. 1832, p. 13; and Mat. Med. p. 521.

The Oriental synonyms of the rhubarb root are *Rewand*, (Arab., Pers. and Hind.) *Variatoo, Kalung*, (Tam.) *Ta-hwang*, (Chin.) *Tai-hoang*, (Coch-Chin.) *Pom bechal, Nerr* (Cashmere.) *Rawond* (Turk.)

A few plants not belonging to either of the preceding Natural orders remain to be considered.

1. *Aloe Indica*, Royle, (Illust. p. 390,) *Aloe perfoliata*, Roxburgh, Flor. Ind. ii, p. 167,) *Kanwar*, (Duk.) *Gheekoomar* (Hind.) *Ghrito komaree*, (Beng.) *Kareybolam*, (Tam.) and *Yarra kalabunda*. (Tel.) This species, with large red flowers, is common in dry localities in the North Western Provinces of India, and is commonly met with in gardens under the name of the *Indian aloe*. O'Shaughnessy(1) considers that it is probably the source of some of the common aloes of the bazaars of India. According to Pereira(2) a portion of the Indian aloes of commerce is the produce of this plant.

Aloe Indica.

گهي کنوار يا کنوار

Kanwār Ghīkarwār.

Closely allied to this species, if not identical with it, is the *Aloe litoralis* of Köenig, (Ainslie, Mat. Ind. ii, p. 169,) which is common on dry arid soils near the sea coast, in many parts of the Peninsula of India. Its vernacular names are *Chota kanwār*, (Hind.) *Koomaree*, (Beng.) *Kattazhei*, (Tam.) and *Chinie Kalabunda*. (Tel.) Whilst staying at Cape Comorin, in 1853, I obtained a considerable quantity of the thick mucilaginous juice of this plant, and by inspissating it in the sun, I obtained some ounces of excellent aloes, far superior to any obtainable in the bazaars, which, in the few cases I experimented with it, proved actively purgative, in the doses in which the aloes of commerce is usually administered; and I feel no doubt that an excellent and efficient kind of aloes might be prepared from it, in considerable quantities, in the hands of an enterprising native or European. Though not employed as a purgative by the natives of Travancore, the fresh juice is in universal use as a local cooling sedative application to many inflammatory affections of the skin, &c. We may have occasion to allude to this hereafter.

Aloe litoralis.

چهوٹا کنوار

Chota kanwār.

(1) Beng. Disp. p. 665. (2) Mat. Med. i, p. 1081.

Previous to 1845, it was not known that gamboge was one of the products of India; but in that year Dr. Hugh Cleghorn, of the Madras Medical Service, forwarded to Prof. Christison[1] certain specimens of gamboge from Mysore, which, on analysis, proved to be even superior as a medicinal agent to the best Siam gamboge; the per centage of resin, the active principle, in the latter, ranging from 71 to 74 per cent.; whilst in that from Mysore, it ranged from 77 to 80. The tree which yields it, the *Garcinia pictoria* of Roxburgh, (Flor. Ind. ii, p. 627; Wight's Icones ii, tab. 102,) the *Xanthochymus pictorius* of Roxburgh, (Coromandel Plants, p. 51, t. 196,) the *Hebradendron pictorium* of Graham? is found along the whole line of Ghats in Canara and Mysore, also in Assam, the Tenasserim Provinces, &c. Its vernacular names are *Goorgeemara*, (Canar.) *Mukkie marum*, (Tam.) *Tha-rat-dau.* (Burm.) It is worthy of remark that the natives themselves were totally ignorant of the purgative properties of its yellow exudation, gamboge. Ample experience has now proved that it produces all the hydrogogue effects of the best Siam gamboge. Dr. Hugh Cleghorn[2] furnishes some good tabular returns of the cases in which he employed it. In sixteen cases in which the gum resin was given, (uncombined,) all the irritant properties of the drug were manifest, for vomiting was twice produced, and more or less of tormina followed in three instances. In one case only there was no effect. In twenty-nine other cases in which three or four grains of the gamboge were given, in combination with ten or twelve grains of cream of tartar, neither vomiting nor hypercatharsis was produced; in one case only slight griping was complained of, and this ceased when the cathartic took effect; in two there was no motion after the first dose, but full evacuations when the remedy was repeated. From these, and the recorded observations of others, Dr. Cleghorn draws the conclusion that the mixture of gamboge and cream of tartar is a cheap and convenient hydrogogue, which might with perfect safety be substituted for the compound jalap powder, especially when we desire to evacuate the watery accumulation of anasarca, or to give a brisk purgative in cases of enlarged spleen and liver. Dr. Alexander Hunter, Dr. F. Arthur, and Dr. J. Kellie, of the Madras Medical Service, have borne similar testimony.[3]

Garcinia pictoria.
Goorgeemara. (Can.)

(1) Pharm. Journ. 1847, vol. vi, p. 60. (2) Mad. Med. Rep. 1855, p. 433.
(3) See Mad. Med. Rep. 1855, p. 431.

The *Mirabilis jalapa*, (Linn. Sp. Pl. 252,) a plant well known to Europeans by the names of *Marvel of Peru*, or *Four o'clock*, (from the fact of its flowers opening at that hour,) was originally a native of Peru, but is now completely naturalized in all parts of India, where it is known by the names of *Abbas*,(Arab.) *Gul' abbasi*, (Pers.) *Abbās*, *Abbasie*, (Hind.) *Kishno-keli*, (Beng.) *Partrashi*, (Tam.) *Myae-zee*, (Burm.) *Sindrikhan*, (Cing.) *Rambul-pokul-ampat*. (Mal.) That the root, which has a nauseous bitter taste, possesses purgative properties is, I believe, undoubted; indeed at one time it was thought to be the true jalap of commerce, an idea, however, which is now exploded. In the Taleef Shereef (p. 110) the root is spoken of as a mild and efficient purgative, equal if not superior to the common jalap. Drs. Hunter and Shoolbred, quoted by Fleming,(1) and likewise Ainslie,(2) consider that its purgative virtues are not sufficient to entitle it to any consideration, and O'Shaughnessy(3) believes, as the result of his own experience, that this root is destitute of any efficacy, or is at the best an uncertain cathartic. An alcoholic extract, prepared from the root, in doses of 40 grains, is stated by Coste and Willement(4) to produce six motions. From these statements it is evident that this root is a poor and uncertain substitute for the true jalap; still it may be employed in cases of emergency. Dr. Ives(5) mentions that he gave it in twice the quantity of the ordinary jalap; but, he adds, as it grows wild in some parts of India, an equal quantity of the wild sort is sufficient.

Mirabilis jalapa.

عباس

Abbās.

Terminalia chebula of Retz. (Roxb. Corom. Plants, t. 197,) *Terminalia reticulata* of Roth, *Melanoxylon Cadika-marum* of Köen; a large tree of the Natural order Combretacea, extending from the Peninsula and Ceylon, to Assam, Nepal, and Burmah; commonly known by the names of *Hariatka*, (Sans.) *Harā*, *Hur*, *Harua*, (Hind.) *Hareetukee*, (Beng.) *Karaka chettu*, (Tel.) *Kadukai marum*, (Tam.) *Kya-zas*, (Burm.) *Arooloo*, (Cing.)

Terminalia chebula.

هرا

Harā.

Its ripe fruit is the true *Chebulie*, or *Yellow Myrobalum*

(1) Cat. Ind. Med. Pl. p. 29.
(2) Mat. Ind. ii, p. 285.
(3) Beng. Disp. p. 512.
(4) Merat & Delens Dict. iv, p. 430.
(5) Voyage to India, &c., p. 463.

of old writers, the *He-lee-luj* of the Ulfaz Udwyeh, (No. 1423,) and the *Hurr* of the Taleef Shereef.(1) It is well known by its Tamul name *kadukai*, and is well figured by Guibourt in his Hist. des Droques Simp.(2) As met with in the bazaars, the fruit is about the size of a large Spanish olive, of an oblong ovate shape, yellow brown colour, and marked with five edges and five furrows alternately. It is generally regarded as astringent, but notwithstanding this, it possesses purgative properties of no mean value. Some few years since I made trial of the common *kadukai* of the bazaars, having been informed on excellent authority that its operation was mild and effectual. It was tried in 36 cases; to 12 it was given reduced to powder, in electuary with jaggery; to 12 in decoction, and to 12 in simple infusion. The powdered nut in doses of 3 ii. produced from three to six copious watery stools, with no vomiting in any cases, and griping in only two. The infusion (six fruit bruised and infused in ℥ iv. of boiling water,) proved very unsatisfactory; in one instance it had no effect; in four it produced only one small consistent stool, and in no case did it operate more than three times. With the decoction the results were most uniform and satisfactory. I found that six kadukai bruised and boiled in ℥ iv. of water, produced on an average from three to five copious stools, not watery but loose, and in no instance was there griping, vomiting, or any other ill effects whatever. Their action seemed prompt and effectual. The addition of a little cinnamon rendered the medicine more palatable. These *kadukai* are procurable at a nominal price throughout India, and where other aperients are not available, may be resorted to with safety.

The unripe fruit is the *Zengi-bar* or *Jungeia* and *Hyur-haritakee* of the Hindoostanees, the *Black myrobalan* of old writers; some excellent remarks on its properties and uses by Rajah Kalikissen were published in the Calcutta Medical and Physical Transactions.(3) It is, he remarks, a mild purgative slightly carminative and tonic, and is given in many chronic complaints with much advantage. It is said to remove obstructions, improve the general health, strengthen the digestion, relieve bilious and hypochondrical affections, and to "increase the happiness of life!" A regular course of this medicine is prescribed for this purpose, and it is recommended to be continued for several months. Its efficacy is

(1) P. 175, No. 1032. (2) Vol. iii, p. 262, t. 323. (3) Vol. v, p. 432.

much extolled. As an aperient the usual dose is two grains with ten grains of black salt *(Kala nemuch)* every morning. Twining(1) advices a somewhat similar formula in spleen affections, but he raises the dose of the myrobalan to 3 ss. He speaks very favourably of the remedy; it is according to him a mild and rather warm purgative, which is tolerably certain in its effects as an aperient, and possesses very considerable tonic properties. It has been found useful in some chronic visceral diseases attended with debility, where mercury did not act favourably. It is surprising, he adds, that a medicine with such useful properties, should be so little employed in many of the cachexiæ that prevail in low and damp situations in Europe.

Terminalia citrina.
Harā. (Hind.)

There is another closely allied species, *Terminalia citrina*, (Roxb. Flor. Ind. ii, p. 435; D. C. Prod. iii, p. 12,) common in Assam, the Khassya mountains, and other parts of India, where it is known by the names of *Liba*, (Sans.) *Harā*, (Hind.) *Alay-gara*, (Canar.) Its fruit, which much resembles that of the preceding species, is stated in the Bengal Dispensatory (p. 340) to be a gentle purgative. Its action cannot be very strong, as it is often made into pickles by the natives.

Argemone Mexicana.
بھربھانڈ
Barbānd.

Argemone Mexicana, (Linn.; D. C. Prod. i, p. 120. Wight's Illust. i, tab. 2.) The *Jamaica* or *Mexican Thistle*, a well known plant of the Natural order Papaveraceæ, originally a native of the West Indies, but now completely naturalized in all parts of the East. It is found chiefly on rubbish heaps near towns and villages, and is easily recognized by its yellow poppy like flowers, its whitish veined leaves, and spinous fruits. Its Oriental names are *Bramhi*, *Brumadandie*, (Sans.) *Bhaband*, *Berumdundie*, (Hind.) *Buro-shelkanta*, (Beng.) *Feringadatura*, (Can.) *Baramadandu*, (Tam. and Tel.) The seeds, on expression or coction, yield a fixed oil, which in the West Indies enjoys considerable repute as a purgative. Mr. E. Huggins, of Nevis,(2) Dr. Michael Short,(3) Dr. W. Hamilton,(4) Dr. Mudic, and others, have testified to its value as a

(1) Diseases of Bengal, vol. i, p. 407.
(2) Lond. Med. Bot. Trans. Nov. 9th 1827, p. 1.
(3) Ibid. p. 3.
(4) Lond. Pharm. Journ. iv, p. 169; ix, p. 129, xii, p. 292.

mild and efficient aperient; its action being attended with a sedative operation; it is particularly vaunted as a remedy in the dry belly ache of the West Indies. Whether the plant has had its virtues modified or lost by transplantation to the East, is uncertain; but O'Shaughnessy(1) instituted some experiments with the East Indian grown plant, and though he administered the oil in ounce doses, it failed to produce any purgative effect. Powerful narcotic effects were attributed to these seeds by early writers; indeed Barham(2) regarded them as stronger than opium; but from the descriptions given by these writers, it appears to me evident that they often confounded the fruit with that of Datura.

The following list comprises the names of other reputed purgative plants, indigenous or naturalized in India.

Name.	*Part used.*	*Authority.*
Agati grandiflora	Leaves	Bengal Disp. p. 296.
Alangium heeapetalum	Root juice	Wight Illust. Ind. Bot. ii, p. 2.
Allamauda cathartica	Leaves	Lindley Flor. Med. p. 533.
Anisomeles Malabarica	Flowers	Irvine Mat. Med. of Patna, p. 30.
Argyrea Malabarica	Root	Graham Bombay Pl. p. 128.
Aristolochia bracteata	Leaves	Ainslie Mat. Ind. ii, p. 5.
Balanites Ægyptiaca	Pulp of fruit	Wight Illust. i, p. 101.
Basella rubra	Leaves	Horsefield Journ. As. Soc. vii, p. 265.
Boerhaavia diffusa	Root	Ainslie Mat. Ind. ii, p. 205.
Bryonia epigœa	Root	Ibid vol. ii, p. 158.
Bryonia scabra	Shoots	Ibid vol. ii, p. 213.
Calotropis gigantea	Juice	Bengal Disp. p. 453.
Cardiospermum Halicac.	Root, Leaves,	Ainslie ii, p. 204. Kirkpatrick Cat. No. 279.
Carthamus tinctorius	Seeds	Taleef Shereef, No. 732.
Cavalium urens	Seeds	Roxb. Flor. Med. iii, p. 145.
Cerbera manghas	Leaves	Horsefield (op. cit.) vii, p. 262. Wight Illust. ii, p. 161.
Dais octandra	Seeds	Horsefield (op. cit.) vii, p. 493.
Ficus carica	Ripe Fruit	Lindley Flor. Med. p. 298.
Gardenia campanulata	Fruit	Roxb. Flor. Ind. ii, p. 557.
Herpestris Mouniera	Root Leaves.	Ainslie Mat. Ind. ii, p. 239.
Lagenaria vulgaris	Wild Fruit	Royle Illust. i, p. 218.
Lepidum sativum	Seeds	Ainslie Mat. Ind. vol. i, p. 95.
Morinda citrifolia	Fruit	Irvine Jour. As. Soc. Beng. 1839, p. 894.
Moringa pterygosperma	Oil of Seeds	Merat et DeLens Dict. Mat. Med. iv,
Myrsine bifaria	Fruit	Royle Illust. i, p 266. [p. 481.
Pavetta Indica	Root	Ainslie Mat. Med. ii, p. 289.
Plumeria acutifolia	Root	Horsefield Asiat. Journ. vii, p. 493.
Prianthema obcordata	Root	Taleef Shereef, p. 38. Ainslie ii, p. 370.
Salvadora Indica	Leaves	Beng. Dis. p. 527. Roxb. Illust. i, p. 319.
Thevetia Neriifolia	Bark	Merat et DeLens. Dict. Mat. Med. ii, p. 182.

(1) Beng. Disp. p. 183. (2) Hort. Amer. p. 152.

ART. VIII.—*Report on Cases of Acute Dysentery treated by large doses of Ipecacuanha.* By Surgeon Major A. BLACKLOCK, Physician to the Madras General Hospital. *(Communicated by the Principal Inspector General, Medical Department.)*

SINCE the receipt of Circular No. 61 of 15th April 1859, from the Secretary to the Director General, Medical Department, to the Superintending Surgeon, twenty-four cases of acute dysentery of all classes of Civil and Military patients have been treated in the General Hospital. Of these, ten, or 41·6 per cent. of the total admissions, were selected for treatment by large doses of ipecacuanha, from the accession of the disease in each case having been recent and the type of a sthenic character, or from the symptoms at the moment being acute, irrespective of the duration of the disease. All these cases recovered. Three were well marked but comparatively slight cases, and ipecacuanha was the chief remedy.

No. 1. Was treated entirely by ipecacuanha.

No. 2. By ipecacuanha with hyosciamus.

No. 3. With ipecacuanha, after the administration of the time-honored dose of castor oil and tinctura opii by the Apothecary on duty.

Seven were severe cases in which ipecacuanha was almost essential to their safe treatment at the commencement, but in which it became afterwards inadmissible for a time, or had to be altogether discontinued, from the type changing to the asthenic.

Taken according to the dates of admission and making the numbers continuations of the foregoing:

No. 4. Took ipecacuanha from the 2nd day in hospital, or the 7th of the disease, till the morning of 5th day in hospital or 10th of the disease. He had then one alterative dose of Hydrarg. c̄ Creta with Pulv. Gregorii, and in the evening of the last date received a dose of Quinine on account of the severity of the remittent febrile exacerbation. From the 6th day in hospital, or 11th of the disease, no medicine was administered.

No. 5. Had ipecacuanha from the 2nd day after admission, or 11th day of the disease, to the 7th day in hospital or 16th of the disease. From the 10th day in hospital, or 19th of the disease, he had iron as a tonic.

No. 6. Had ipecacuanha with and without hyosciamus

on 2nd day in hospital, and 3rd of the disease. On the 3rd day in hospital the ipecacuanha was omitted by the mouth and given as an enema with Tinct. Opii. for one day, and then omitted altogether on account of increase of general debility and distress without any intestinal improvement. From this time, till the 7th day in hospital or 9th of the disease, he steadily recovered under the use of full doses of Tinct. Ferri.

No. 7. A very severe case with rectal sloughing; ipecacuanha by mouth and rectum from 2nd day in hospital, or 3rd of the disease, till 5th day in hospital and 6th of the disease, when sloughing commenced. On evening of 5th day in hospital a powder of Rhubarb and Hydrarg. c̄ Creta was exhibited on account of watery stools. From 6th day in hospital and 7th of disease till 8th day in hospital and 9th of disease, draughts of Acetate of Ammonia with Liq. Ammoniæ and Hyosciamus were administered, as wine given on the day the sloughing commenced was found to disagree after the first day. From the 8th day in hospital and 9th of the disease, medicine was omitted till the 11th day in hospital, when the Ammonia mixture was twice repeated. After that no medicine was required but a dose of Castor oil and a little Copaiba for urethral irritation.

No. 8. Had Ipecacuanha from 1st day in hospital and 3rd of disease till end of 5th day in hospital and 7th of disease. It was then omitted and Iron exhibited on account of feculence, which was good, with a little blood and pus, on the 4th day in hospital and 6th of disease, having been replaced by pure bile, and the pulse having risen from 84 to 100, with palpitation. Feculence of evacuations was restored on the iron treatment, but the Iron was discontinued on the 8th day in hospital and 10th of the disease, as the pulse continued at 100, with evening remittent exacerbation, and full doses of Quinine were substituted. On the 10th day in hospital and 12th of the disease, the pulse fell to 84 on the quinine treatment and convalescence began.

No. 9. Ipecacuanha with quinine and sherry from 1st day in hospital and 11th of the disease till evening of 3rd in hospital and 13th of the disease, when iron was substituted on account of debility, with cæcal gurgling, and flow of bile. Ipecacuanha resumed, with tinct. camph. co.; and nitric acid on evening of 4th day in hospital and 14th of disease, on account of much florid blood having been passed, and the pulse becoming quicker and very irritable. Ipecacuanha

mixture omitted on 7th day in hospital and 10th of disease, as the stools were copious and feculent without blood, and the pulse had fallen to 96 and lost its jerk. On the 8th day in hospital and 18th of disease he had a diuretic mixture. On 9th day in hospital and 19th of disease all medicine was omitted and diet alone attended to.

No. 10. Ipecacuanha with quinine from 2nd day in hospital and 6th of disease till 3rd in hospital and 7th of disease, when the stools, from being copious and feculent, disappeared, and were replaced by blood and pus. Tinct. Ferri was then administered. Stools were feculent next day and without blood, only a little pus. Blood and gelatinous mucus appearing on 4th day in hospital and 8th of disease, with sympathetic fever, Ipecacuanha, Quinine, and Henbane were substituted for the Iron. Next day the pulse had fallen to 84, and the stools were feculent, without mucus and blood. On the evening of 5th in hospital and 9th of disease the stools were scanty and watery, the pulse rising and urine scanty. He had a diuretic mixture and Ipecacuanha was omitted. Next day the stools were normal and the pulse 72. From this time till the 9th day in hospital and 13th of the disease the treatment was general, principally diuretic, and then medicine was given up till the 14th day in hospital and 18th of the disease, when small doses of Tinct. Ferri were ordered, on account of a little anemia then present.

1.—Dysenteria Acuta.

Charles King, Æt. 22.—Cook, Ship "Southern Cross."—Temperament Sanguine.

5th day of Disease. 1st Treatment. 1st Ipecacuan. Admitted 1st September, 1859, complaining of having been purged several times, each time accompanied with severe straining. No headache, or fever; pulse weak, jerking; tongue red-edged. On examining stools they are found to contain a little blood and mucus of yellow tinge and fœtid odor. Micturates freely; no abdominal pains; appetite good; has suffered for the last 5 days; had no treatment outside.

℞. Ipecacuan. grs. x. In 4 pills now, and repeat at 8 P.M.

7th D. 3rd T. 2nd Ipecac. 3rd.—Stools of bilious character. No blood, less straining; pulse 98, jerking; tongue clean.

Cont. Ipecacuan. three times a day.

8th D. 4th T. 4th.—Is much improved; no blood or mucus; stools of a watery consistence; tongue clean; extremities somewhat cold; appetite good.

Omit medicine.

Spoon diet with Oi. broth, 1lb. bread, Oi. egg posset, oz. ½ butter.

11th D. 7th T. 7th.—Improving rapidly; stools begin to be formed; no abdominal pains.

Rest. Diet.

14th D. 10th T. 10th.—Stools more formed; no blood or mucus; no abdominal pains; pulse normal; tongue clean; appetite good.

Rest. Diet.

15th D. 11th T. 11th.—Looks well; is improving rapidly.

Rest and Diet.

16th D. 12th T. 12th.—Stools formed, without fætor; not accompanied with tenesmus or griping; pulse weak, but regular; skin moist; appetite good.

Cont.

18th D. 14th T. 14th.—Is quite well, but states he is rather weak; pulse normal; tongue clean, moist; skin cool; appetite good.

Cont.

19th D. 15th T. 15th.—Bowels regular; tongue, pulse, and skin normal; appetite good; is fit for duty.

Discharged.

2.—DYSENTERIA ACUTA.

William Nealon, Æt. 19.—Discharged Seaman,—Temperament Sanguine.

1st D. 1st T. 30th June 1859.—Admitted complaining of frequent purging, with pain across abdomen, and straining; stools green and yellow feculence in small quantities, with very little mucus and no blood; pulse 120, soft, weak, regular; hands rather cold and clammy; feet and rest of skin warm; no headache; no pain on pressing on abdomen; looks well.

℞. Calomel. grs. iv.
Opium. gr. i now.
℞. Ol. Ricini. ℥ i.
Tinct. Opii. gtt. xv. four hours after Cal. and Opium.

Spoon diet.

2nd D. 2nd T. 1st July.—Had several stools from oil last night, with a little straining, and slept well in the intervals. Other symptoms the same.

Spoon diet, broth Oi., bread 1℔., rice Oi.

No medicine.

3rd D. 3rd T. 2nd—Still frequently at stool and stools are still green and yellow, feculent, thin, without mucus, and only a drop or two of blood at the last. No pain even on pressing; pulse 120, soft, weak, regular; skin warm all over, except hands; no headache.

Nothing.

5 P. M.—No change, several stools of same character, to day with straining.

℞. Tinct. Hyoscyami. ℥ i.
Aqua. ℥ i. M. now
and one hour after draught give.
Ipecacuan. grs. xx. in 4 pills, and repeat at 8 P. M.

4th D. 4th T. 1st Ipecac. 3rd.—Vomited eight times, and had eight stools of same character, with a little straining. Slight pain on pressing region of tranverse colon; skin temperate, dry, except hands, which are clammy as before; nausea at present; no headache; pulse 96, soft, weak, regular.

Cont. Ipecacuan. thrice a day.
Omit rice.

5th D. 5th T. 2nd Ipecac. 4th—Stools still contain blood and mucus, with a little pus now, and much brown bile. Complains of straining.

Cont. Ipecacuan.

6th D. 6th T. 3rd Ipecac. 5th—Stools watery, less bilious, no blood, nor pus; a little mucus; vomited once last night; hands warm and dry; says he has still a little straining.

Omit Ipecacuan.

7th D. 17th T. 16th—Improved steadily after last report. Is now fit for duty.

Discharged.

3.—Dysenteria Acuta.

J. Bradbury, Æt. 45.—Pensioner A Troop H. A.—Temperament Sanguine.

2nd D. 1st T. 14th August, 1859, 9 P. M.—Admitted complaining of being frequently at stool and passing blood and mucus, with straining. Pulse soft and full; skin cool and moist; tongue white. This is the second day of the disease.

℞. Ol. Ricini ℥ i.
Tinct. Opii. gtt. x. M. now.

3rd D. 2nd T. 1st Ipecac. 15th.—Bowels freely moved by oil. Stools tinged with blood.
Ipecacuan. grs. xx. in 4 pills thrice a day.

4th D. 3rd T. 2nd Ipecac. 16th.—Tenderness over abdomen; no nausea, nor vomiting.

Cont. medicine.

5th D. 4th T. 17th.—Bowels moved only twice; stools very bilious; no blood; no tenderness.

Omit medicine.
Arrack ℥ iii. at bed time.

6th D. 5th T. 18th.—Improving. Beer Oi. each night.

10th D. 9th T. 22nd—Quite well.
Discharged.

4.—Dysenteria Acuta.

Marcus Abrahamson, Æt. 24.—Seaman, Ship "Seaforth"—Temperament Sanguine.

6th D. 1st T. 29th May, 1859.—Admitted at 12 noon complaining of frequent calls to stool, with bearing-down, inclination to sit, and constant severe pain across abdomen below navel. Has also soreness extending deep along centre of abdomen from navel to throat. Skin hot and dry; pulse full, 100, of good strength; slight headache; tongue broad, thick, white, with red edges; thirst; urine scanty; stools scanty and consist of mucus, pus, and blood. Has been ill five days after exposure to wet.

℞. Calomel grs. iv.
Ext. Opii. gr. i. M. now.
Ol. Ricini ℥ i. c. m. s.

7th D. 2nd T. 1st Ipecac. 30th.—No sleep, has been eight or ten times at stool, and had much pain and straining; no feculence in stool. It is all pus, blood, and mucus. Pulse 84, full, firm; skin dry; tongue the same as yesterday.

℞. Pulv. Ipecacuan. grs. xx.
Gum. Acaciæ grs. xx. M. in bolus thrice a day.
Tinct. Hyosciam. ℥ i.
Aqua ℥ i. M. to be given half an hour before first dose.

8th D. 3rd T. 2nd Ipecac. 31st.—Vomited twice after ipecac., but retains it now. Is often at stool and has the same abdominal pain, but has less straining; stools the same as before; pulse 78 to 84, soft, weak, full; skin moister; tongue the same.

℞. Ipecacuan. grs. xxv.
Pul. Gum. Acaciæ grs. xxv. M. ft. bolus bis die.

9th D. 4th T. 3rd Ipecac. 1st June.—Much relieved; still has a little tenderness on left side on pressure, but the straining is slight, and his bowels move ten or twelve times in 24 hours. Still blood in stools, and about an ounce of pus morning and evening, with clear mucus; no feculence yet.

2nd.—No change; but he is pretty easy.

Cont.

10th D. 5th T. 4th Ipecac. Vespere.—Increased heat of skin and thirst, and pulse 96 since 4 o'clock P. M. against 80 in the morning.

Cont.

11th D. 6th T. 5th Ipecac. 3rd.—A very little yellow feculence seen to-day in stool for the first time. No straining; very little abdominal tenderness; pulse 80, soft, full, broad.

Omit. Ipecacuan.

℞. Hydrarg c̄ Creta grs. xv.
Pulv. Gregorii grs. xxx. in sugar and water now.

Vespere.—Pulse again 96, full, and rather firmer; skin decidedly

hot and dry; bowels moved several times to day easily; no tenderness, still much pus and mucus, and a little blood.

℞. Quinine Sulph. grs. vi.
Acid Nitric dil. gtt. v.
Aqua. ℥ ii. M. twice to-night.

12th D. 7th T. 4th.—Had a good night; pulse 84; no mucus, blood, nor pus; stools entirely healthy, half-formed feculence; tongue broad, thick, white, with red edges; skin cool and moist.

Omit Quinine.
Spoon diet, Oii. broth, 16 oz. bread, 1 oz. butter.
Oi. rice, 1 bread pudding.

13th D. 8th T. 5th.—No fever last night; stools becoming copious, partly formed, healthy, free from morbid products.

No medicine.
Cont. diet with Oi. milk each morning.

20th D. 15th T. 12th.—The bowels have been quite normal in their functions since last report; but he regains strength very slowly. Tongue still thick, and broad, with red edges.

Cont. diet, with Portwine, 1 measure, at dinner, and at 8 P. M.

21st D. 16th T. 13th—Gaining strength very slowly.

Cont.

24th D. 19th T. 16th—Much stronger; bowels acting normally. Ship about to sail.

Discharged.

5.—Dysenteria Acuta.

J. Maclean, Æt. 19.—Seaman, Ship "White Eagle."—Temperament Sanguine.

10th D. 1st T. 20th June 1859.—Admitted 11½ A.M. with dysentery of 10 days duration, during which time he has passed blood and mucus, and had very little straining. No pain at present on pressure; slight tenesmus; urine high-colored, and stools dark, brown, feculent, mucous, but not bloody; pulse 80 to 96, weak, intermitting once in three and seven; tongue whitish, thick, broad, red edged; skin rather warm and dry.

℞. Pulv. Doveri gr. v.
Pulv. Ant. Co. gr. v. M. every third hour.
Warm bath.

11th D. 2nd T. 1st Ipecac. 21st.—Bowels moved five or six times last night; no griping; slight tenesmus; stools feculent and of same character; says he has had pain in region of stomach since last night. It is increased by pressure and strikes through to back; no nausea; pulse soft, full, not intermitting; tongue thick, dryish, red edged; skin temperate and dry.

℞. P. Ipecacuan. gr. x., made into pill with Mucilage, thrice a day.

5 P. M.—Vomited once by Ipecacuanha; five stools; no griping; no

straining; stools feculent, mucus with a little blood. Pain in left hypochondrium severe during the forenoon, and it impeded his breathing. It is easier now. Pulse 100, soft, full, weak; tongue dryish, rough, red edged; no thirst.

Cont. pills.

12th D. 3rd T. 2nd Ipecac. 22nd.—Pain severe last night, could not rest on either side, only on back. Had fever till 4 A. M. Pulse 80, full and soft; stools nearly natural; tongue red in front and rather dry.

Blister to pained part.

Ipecacuanha gr. xv. thrice a day.

13th D. 4th T. 3rd Ipacac. 23rd.—Little sleep on account of frequent calls to stools, but there was no straining. No pain in bowels and no blood; no pain except from blister on left hypochondrium; can take a full breath with ease; no nausea; a little thirst; pulse 75, soft, not so full; tongue white, red edged; no appetite.

Cont. Ipecac. thrice a day.

14th D. 5th T. 4th Ipecac. 24th.—One stool last night and one this morning; no uneasiness any where excepet in blister; slept well; pulse 70, soft, regular; tongue cleaning.

Cont. medicine.

Dress blister.

15th D. 6th T. 5th Ipecac. 25th.—Vomited once last night, most probably from the Ipecac.; bowels moved easily thrice; stools natural; no pain except in blister; appetite good; pulse full, soft.

Continue Ipecacuan.

16th D. 7th T. 26th.—Vomited once last night immediately after supper; passed a good night and had only four stools of good character, passed easily; no uneasiness except from blister; appetite unusually good.

Omit medicine.

Cont. blister dressing.

17th D. 8th T. 27th.—Rests well; eats well; four stools in 24 hours, and they are more than half formed, of good character, and free from foreign matters; blister healed; is only a little weak.

18th D. 9th T. 28th.—Doing well.

19th D. 10th T. 29th.—Bowels moved twice last night; stools natural; still weak; tongue clean.

R. Tinct. Ferri ♏ xv.

Aqua. ℥ iij. M. thrice a day.

22nd D. 13th T. 2nd July.—Has a slight defined swelling like half an egg, lengthways in the left hypochondrium; it appeared yesterday; it seems to be in the muscles; no change otherwise.

Cont.

23rd. D. 14th T. 3rd July.—Swelling much less; feels well.
Cont.

29th D. 20th T. 9th.—Gaining strength steadily; bowels normal.

31st D. 22nd T. 11th.—Quite well.
Discharged.

6.—Dysenteria Acuta.

Edward Moon, Æt. 20.—Apprentice "Ostrich."—Temperament Sanguine.

3rd D. 1st T. 9th September, 1859.—At 11 A. M. admitted with acute dysentery which he has had for last two days. Pulse 80, soft, moderately full; skin cool; slight straining at stool, but he is not often at it. Very little tenderness when abdomen is pressed; stools consist of a little green feculence with blood and mucus; has had castor oil on board-ship.

Warm bath.
Rest.

4th D. 2nd T. 1st Ipecac. 10th.—Pulse 80, soft, rather full; skin too warm and dry; stools frequent, pure blood and mucus passed with much straining; no headache; not much tenderness at sides of abdomen.

℞. Ipecac. grs. xx. in 4 pills now and at 12 noon.
Egg posset Oi. morning and evening.

5 P. M.—Pulse 96, soft, rather feeble; tongue white, red-edged; vomited repeatedly to-day; skin very wet from perspiration, and cool; stools, blood and mucus, with a very little green feculence.

Tinct. Hyosciami ℥ i.
Aqua. ℥ ii. M. now.

Rept. draught at 8 P. M. with Ipecacuan. grs. xx in 4 pills.

5th D. 3rd T. 2nd Ipecac. 11th.—Pulse 96, feeble; skin wet with perspiration, cool; tenderness in cæcum and sigmoid flexure; griping pains frequently followed by stool, which causes much burning and tenesmus; stools chiefly blood and stringy, red, mucus; little urine, and that hot and scalding; expression good.

℞. Ipecacuan. grs. xx.
Tinctura Opii. gtt. xx.
Congee water ℥ ii. as enema at 6, 12, and 4 o'clock.
Omit Ipecac. pills.

5 P. M.—Skin not so moist and cool; stools and pulse are the same.

Ipecac. grs. xx.
Tinct. Hyosciam. ℥ i.
Congee water ℥ ii. as enema at 8 P. M.

6th D. 4th T. 12th.—Pulse 92, soft, rather feeble, steady; skin cool; looks and feels much depressed; little tenderness in abdomen, but frequent stools with much straining; stools, green

feculence, in small quantity, blood and mucus in strings, a little pus commencing to appear; tongue white, thin, red-edged, moist.

℞. Tinct. Ferri. ♏ xv.
Aqua. ℥ ii. every hour.
Omit. Ipecac. pill and enema.

5 P. M.—Pulse 92 when asleep, 120 when awake, soft, small, weak; little tenderness in abdomen, but complains bitterly of scalding; stools contain iron-grey feculence in considerable quantity, and less blood, and mucus.

Cont. Tinct. Ferri.

7th D. 5th T. 13th.—Some sleep last night; bowels moving almost constantly; stools contain a small quantity of feculence, and less mucus and blood, and the former is not tenacious; skin cool and dry; pulse, 96, soft, of fair strength, not jerking; tongue whitish, normal in size, red-edged, expression speculative, says he does not like egg posset.

Cont. Iron every hour.
Omit egg posset.
Milk 2 pints.

5 P. M.—Pulse 92, steady, very full, soft, jerking; tongue white, red-edged, broad, looks comfortable; no headache, no pain, but is very tender when pressure is made deep in cæcal region, and back into pelvis over bladder; abdomen cool and moist; skin cool and moist; considerable uneasiness in seat. Stool and urine only about a pint to day; feculence grass green, small in quantity, and floating in bloody water with a little mucus.

℞. Tinct. Ferri. M. xx.
Aqua ℥ ii. M. every hour.

8th D. 6th T. 14th.—Had a very comfortable night; pulse now 88, easily excited; skin cool and dry; tongue clean, rather clammy; no pain except on pressure a little above cæcum; stools scanty, feculent, green with mixed blood, and pus; blood dissolves rapidly in the fluid; urine copious.

Cont. Iron.

5 P. M.—Feels comfortable, except at times when he has darting pain from anus up right side of abdomen and chest; slight fulness in sigmoid, but little tenderness there or in cæcum; liver bears percussion well; pulse 94, soft, full, jerking, steady; tongue clean, normal in size, red-edged; skin cool and slightly moist; stools, green feculence with distinct blood and pus, but little mucus; stools tinged dark grey by Iron, but the green feculence is made dark green by it.

Cont. Iron.

9th D. 7th T. 15th.—Good sleep, no pain any where except at anus from scalding; still fulness in sigmoid, none in cæcum; skin cool and soft; tongue clean, normal in size; pulse 96, soft, weak, jerking; stools passed frequently, they are almost pure brown

bile, with pus and mucus, tinged with blood from several separate ulcers.

Cont. Iron.

5 P. M.—Looks well, but the pulse is 96, soft, full, jerking; stools almost one pint of thick feculence, brown, bilious, with dark green patches, and several drops of pus mixed with blood; stools passed every hour and half; tongue clean, normal; no pain.

Cont.

10th D. 8th T. 16th.—Had a pretty good sleep and seldom passed any stool; stools bilious, feculent, very slightly tinged with iron, containing a good deal of pus, with no mucus and little blood; skin cool, moist; tongue rather foul, red-tipped, and with two lateral salivary streaks; wishes to have a little meat.

Omit Iron.

℞. Acet. Ammon. ʒ ii.
Liq. Ammon. ♏ xv.
Tinct. Hyosciam. gtt. xl.
Aqua. ʒ ii. M. thrice a day.
4 oz. boiled mutton.

11th D. 9th T. 17th.—Pulse 88, soft; skin cool and moist; tongue whitish; looks well, no pain, nor tenderness; stools yellow, feculent, half-formed, with a little pus and a mere tinge of blood; appetite good.

Boiled mutton 12 oz.
Omit medicine.

5 P. M.—Pulse 92, soft, full, weak, not jerking; tongue clean, no uneasiness; stools yellow, half-formed, feculent, only a very slight tinge of blood and very little pus; skin moist, temperate.

38th D. 36th T. 14th October.—Since last report he has convalesced steadily, and is now fit for duty.

Discharged.

7.—Dysenteria Acuta.

Albert Jamieson, Æt. 23.—Trooper, Mounted Police.—Temperament Sanguine.

9th September, 1859, 5 P. M.—Admitted, complaining of being frequently at stool and of having great pain at lower part of abdomen, and straining with difficulty in passing urine, which is hot and scalding; skin rather too warm and dry; tongue covered with a thick pasty coat, thin, with red edges; pulse 85, soft, full; has been ill since yesterday.

℞. Ol. Ricini. ʒ i.
Tinct. Opii. gtt. xx.
Aq. Menthæ ʒ i. M. now.

3rd D. 2nd T. 1st Ipecac. 10th.—A little feculence and much blood and mucus brought away by the oil after much straining; pulse 85, soft, full; tongue the same as yesterday; skin hot and dry.

℞. Ipecacuanha gr. xx. in 4 pills now and at 12 noon.

5 P. M.—Skin very hot; pulse 95; tongue thickly coated, red-edged, no change in stools; says he has a commencing gonorrhœa, which aggravates his uneasiness, and for which he has just got the Apothecary to try a catheter, which has not passed, but has brought away blood. I am certain he has not swallowed one of the Ipecac. pills, though he has twice had them brought to him. He has not had nausea.

Repeat Ipecac. grs. xx. in 4 pills now and at 8 P. M.

4th D.
3rd T.
2nd Ipecac.

11th.—Pulse 76; skin moist; stools contain some feculence, and much blood but little mucus; tongue thickly coated; not much tenderness.

Ipecac. gr. xx. in 4 pills now and at 8 P. M.

5 P. M.—No change.

Cont. Ipecac. pills and give

Ipecac. and Opii. enema at 5 and 8 P. M.

5th D.
4th T.
3rd Ipecac.

12th.—Pulse 84 to 88, soft, full; tongue the same; much pain at anus and considerable tenderness over cæcum and sigmoid flexure; skin cool and dry, cannot take the pills.

Cont. Enemata.

Ipecac. gr. xx.

Aq. Menthæ ʒ ii. M. as a draught now and at 12 noon.

5 P. M.—Stools blood and mucus, and little fœcal matter; pulse 115, soft, compressible; no vomiting since the morning; scarcely any tenderness.

Cont. enema and medicine every third hour.

Hip bath twice to night.

6th D.
5th T.
4th Ipecac.

13th.—Had a little sleep last night; had frequent stools towards morning, less scalding at anus, none in urethra; face dusky; skin too warm and dry; pain over cæcum and sigmoid on pressure; pulse 80, soft, weak, jerking; tongue very thickly coated, edges red; vomited once last night; stools about 3 pints, watery, dark, yellow, feculent, no mucus, good odor; one small clot.

℞. Ipecacuan. gr. xx.
Tinct. Hyoscyami. ♏ xl.
Aq. Menthæ. ʒ ii.
Sherry. ʒ ii. M. thrice a day.
Hip bath thrice a day.

5 P. M.—Pulse 76, soft, rather full, of good strength; skin moist and cool; some headache; stools about a pint; dirty yellow, watery, no blood, nor mucus; no scalding in anus, nor urethra; no pain in abdomen, unless pressure is made over sigmoid or cæcum, or he turns in bed; tongue dirty yellow, brown, red-edged, moist.

℞. Hydr. c Creta. gr. xx.
Pulv. Rhei. gr. xx. M. now.
Omit. wine and draughts.
Cont. Hip baths.

7th D. 6th T. 14th.—Had a very comfortable night and looks well now; face very slightly dusky; tongue thinly coated, cleaning, red-edged; skin cool but dry; no pain when turning round, and very little on sigmo-cæcal pressure; fulness in cæcum has disappeared; pulse 72, soft, moderately well filled, of fair strength; stools and urine about a pint, rather dark yellow, of good odor; no blood nor mucus.

℞. Aqua. Acet. Ammon. ℥ ii.
Lig. Ammon. gtt. xv.
Tinct. Hyosciami. gtt. xxx.
Aqua. ℥ iii. thrice a day.
Cont. Hip bath thrice a day.

5 P. M.—Good sleep this forenoon; complexion clear; tongue very foul, red-edged; pulse 72, of good strength; skin temperate, moist; no pain in abdomen, even on pressure; no pain in anus; stool and urine a pint; stool brown liquid, and in part normal and yellow.

Cont. Med. and Hip bath.

8th D. 7th T. 15th.—Disturbed by griping pain last night and inclination to go to stool; stools healthy, feculent, partly formed and small in quantity; no blood nor mucus; no abdominal tenderness; urine dark brown, about 1½ pint; expression good; face pale; tongue cleaning, pale-edged; skin cool and soft; pulse 68, soft, of fair strength, regular; wishes to have broth.

Broth (chicken) 1 pint for breakfast and one for dinner, bread 8 oz.
Cont. Acet. Ammon. draughts.
Hip bath twice a day.

5 P. M.—Pulse 80, soft, weak, free from jerk; about ¼ pint of very bilious feculence to-day, with two thick pieces of slough of mucous and sub-mucous tissue from lower part of bowel, irregular in shape, and about 3 square inches altogether; skin cool and dry, soft; looks well; complexion clear and pale; tongue cleaning at edges, which are pale; no pain, nor tenderness; no scalding at anus.

9th D. 8th T. 16th.—Slept well; feels very comfortable; skin cool and of healthy sebaceous odor; pulse 60 to 64, soft, moderately well filled, free from jerk; tongue foul, rough, pale-edged; about ℥ iss. of good bilious feculent stool without any slough.

Omit medicine.
3 pints chicken broth.
2 pints milk, bread 8 oz.

5 P. M.—A little uneasiness for a few minutes to-day in anus; about half an ounce of formed stool of good color, no slough, no pus, nor mucus; plenty of urine; pulse 76; skin temperate; tongue rather rough, cleaning.

10th D. 9th T. 7th.—Restless in the early part of the night, owing to uneasiness in rectum, and inclination to go to stool; slept well this morning, and looks refreshed; stools yellow, semi-fluid, feculent, no blood, nor mucus; no tenderness in abdomen, but

the recti muscles offer considerable resistance when pressure is made just above pubis; face pale; skin cool and moist; no headache, tongue white, rough, slightly red-edged; pulse 64, soft, rather weak, inclined to be variable.

Cont. diet.

5 P. M.—Pulse 72, soft, weak, free from jerk; no uneasiness any where; stools feculent, fluid, about ℥ iv.; tongue broad, cleaning.

11th D. 10th T. 18th.—Doing well; skin cool; pulse 80, soft, regular; stool small in quantity, formed, normal.

12th D. 11th T. 19th.—Improving; pulse 84; stool formed, small in quantity; urine copious; skin cool; tongue nearly clean, pale-edged.

5 P. M.—Has been hot to-day, and had pain in abdomen from air accumulating; no stool, no pain, nor tenderness on pressure; tongue coated, red-edged; skin rather hot, and dry; pulse 80, soft, of fair strength, regular; is giddy when he sits up, and sometimes has throbbing in head.

R. Mist. Salin. c̄ Quinæ ℥ iii. every second hour.

13th D. 12th T. 20th.—Had a comfortable night; one feculent, formed, healthy stool this morning; urine abundant; skin cool; pulse 76, soft, of fair strength; tongue white, furred, thick, pale edges; no pain nor uneasiness any where.

Omit medicine.

Cont. diet.

5 P. M.—Easy all day; perspired a good deal an hour ago; skin now rather too warm and dry; no stool; tongue white, rough, red-dish-edged; urine scalding; no pain any where.

Acet. Ammon. Mist. ℥ iii. twice to night.

14th D. 13th T. 21st.—Slept well; tongue white, pale, red-edged; no stool; no pain; pulse 80, soft, of fair strength.

16th D. 15th T. 23rd.—Has been very well, but weak since 21st instant; tongue now white, broad, rather red-edged; complains of irritation in urethra, and has minute drops of blood coming from it after irritation; pulse slow and feeble; skin cool, moist; bowels not moved for last three days.

Ol. Ricini ℥ i. now.

Sherry one measure at dinner and 8 P. M.

Balsam Copaiba ʒ ii.

Aqua. Menthæ. ℥ ii. at night.

5 P. M.—Bowels freely moved, stools healthy, feculent; skin cool; tongue normal; pulse 84; urine free; no pain in urethra.

17th D. 16th T. 24th.—Could not rest last night on account of uneasiness at neck of bladder, brought on most likely by the disturbance of the purgative; looks well; is sitting in a chair.

Cont. Copaiba ʒ ii. at night.

44th D. 43rd T. 21st.—Has improved steadily since last report; only one stool a day; health excellent.

Discharged.

8.—Dysenteria Acuta.

Charles King, Æt. 22.—Cook "Southern Cross."—Temperament Sanguine.

3rd D. 1st T. 1st Ipecac. 22nd September, 1859, 1¼ P. M.—Admitted, complaining of having had frequent painful calls to stool since Monday night, 19th instant. Has been several days on board his ship in the roads after convalescing from dysentery in the Sailor's Home, to which he was sent when he was discharged from this Hospital on the 15th instant. He has constant pain in left hypochondrium extending across abdomen, with frequent calls to stool and much severe straining; stools scanty, green feculence, with almost an equal part (℥ii.) of dark fluid blood; skin hot and dry; pulse 84, soft, very full, regular; tongue large, broad, thick, white, rough, with red edge, and triangular tip; thirst; urine almost none; looks easy and well.

℞. Tinct. Hyosciami. ℥ ii.
Ipecacuan. grs. xxx.
Aqua. Menthæ. ℥ ii. every fourth hour.

4th D. 2nd T. 2nd Ipecac. 23rd.—Many stools last night, but not much abdominal pain and less straining; stools feculent, green, about a pint with a little blood, and almost ¼ pint of urine; pulse 84, soft, tolerably well-filled; pain and tenderness only in sigmoid; skin cool and soft, but very moist; tongue white, moderately red-edged.

Cont. Ipecac.

5 P. M.—Many stools to-day with much straining and pain in seat; stools green, feculent, not so green as yesterday, with about 4 ounces of fluid blood; pulse full, weak, soft, 96; skin hot and dry; nausea, but no vomiting; looks well, but has brown flush on each cheek and under eyes; pain constant and sharp, he says, in left hypochondric region, sometimes pain is felt in right hypochondrium fairly below the liver and extending towards sigmoid; both pains increased on pressure; little urine; abdomen normal in bulk and appearance; has had two doses to-day.

Repeat dose at 6 and 8 P. M.

5th D. 3rd T. 3rd Ipecac. 24th.—Says he was fully 20 times at stool last night with a little straining; stools copious, feculent, partly yellow, partly green; not above ℥ iss. of blood; skin cool, soft, but slightly moist; tongue white, red-edged; pulse 84, soft, of fair strength; nausea, but no vomiting; had altogether ℥ ii. of Ipecac. yesterday.

Cont. Ipecac.

5 P. M.—Skin cool and dry; pulse 92, soft, full, jerking; tongue white, red-edged, thick, and broad; no pain across abdomen, nor above cæcum now; all the pain is in left hypochondrium, and when he has increase of pain there he has to go to stool. Has been fre-

quently at stool to-day; stool, in greater part blood with green feculence, altogether about a pint and a half; has had 3 doses of Ipecac.

℞. Ipecac. gr. xl.
Tinct. Hyoscy. ℥ i.
Aqua. Menthæ. ℥ ii. now and at 8 P. M.

6th D. 4th T. 4th Ipecac. 25th.—Very often at stool last night; had pain in sigmoid, but no pain in anus; skin moist and warm; pulse 76 to 84, soft, full, regular; no headache; no griping pain in abdomen; little pain when sigmoid is pressed; no vomiting; no nausea; tongue white, red edged; stools copious, mostly yellow, partly green feculence, not much blood, but a good deal of pus and mucus; urine abundant.

Cont.

5 P. M.—About a quart of brown bile passed to-day with a little green feculence and a little blood and pus mixed; has sharp pain at times in sigmoid; skin hot and dry; tongue white, red-edged, with red triangle at tip; pulse 96 from irritation of the bile.

Cont.

7th D. 5th T. 5th Ipecac. 26th.—Many times at stool last night; stools a mixture of yellow and green feculence with pus and blood; but very little of the last; says his gut protrudes a little now at stool; sigmoid pain the same; skin rather too warm and dry; tongue white, red-edged, not so red at tip; pulse 84, soft, full, of good strength; much pure bile coming down; urine abundant.

Cont.

5 P. M.—Several green yellow feculent stools to-day with almost ½ an ounce of blood and pus; skin rather hot and dry; pulse 100, soft, full; tongue white, broad, not so red-edged; complains of much nausea; some vomiting and a good deal of palpitation after the Ipecacuanha; urine in fair quantity, pale, much bile (brown) in stools.

℞. Tinct. Ferri Muriat gtt. xl.
Aqua. ℥ iv. M. every 2nd hour.

8th D. 6th T. 27th.—Slept in the middle of the night after palpitation disappeared; bowels frequently moved; stools and urine copious; stools feculent, yellow, with a little green, and a good deal of pus, but very little blood; pain the same; pulse full, soft, jerking, 96; skin sometimes rather too warm and dry, sometimes moist.

Cont. Iron every 2nd hour.

5 P. M.—Is in same state, but complaining much of irregular action of the heart; about ℥ ii. of pus in stools, with a little blood and a good deal of feculence; urine abundant.

Sherry one measure now, and repeat at 8 P. M.

9th D. 7th T. 28th.—Often disturbed during night; stool copious, feculent, free from pus and blood; urine abundant;

pulse 84, soft, full, jerking; tongue moist, cleaning; skin rather dry and harsh; pain in sigmoid less.

Cont. Iron.

5 P. M.—Skin rather harsh and dry; pulse 96, soft, full and jerking; tongue cleaner, reddish-edged and large; pain in sigmoid less; stools partly formed, yellow, feculent with about a fluid ounce of pus, and a very little blood; urine abundant.

Omit Iron.

Cont. Wine.

12th D. 10th T. 1st October.—Has gone on favorably since last report; stools nearly formed yesterday, of good color, no pus, no blood. Iron was resumed yesterday evening, as the pulse became very full, and tongue broad; skin now warm and moist; pulse about 100, soft, full; no pain in sigmoid; stools feculent, dark from iron, no foreign matter.

Cont. Iron.

Sherry, one measure at dinner and at 8 P. M.

5 P. M.—Skin rather too warm and moist; bowels moved several times to-day; stools half formed, bilious, healthy; pulse 100, soft, full, jerking; tongue broad, thick, and clean.

℞. Quinine grs. xxx.
Aqua. ℥ xvi.
Acid. Sulph. dil. ℥ iss.
Tinct. Hyoscyami. ℥ ii. M.
Ft. Mistura. ℥ iv. every 4th hour.

13th D. 11th T. 2nd.—Rested well last night; pulse 100, soft, smaller, less jerk; tongue clean, broad, not so thick; six stools last night; stools copious half formed, feculent, nothing abnormal in them; urine copious.

Cont. Quinine Sol. ℥ iv. every 3rd hour.

14th D. 12th T. 3rd.—Rested well; looks now pale, sharp and clear; pulse 84, soft, moderately full, with slight jerk; skin temperate, dry, soft; says he had twelve stools last night, but the stools are more than half formed, perfectly healthy, and free from mucus, pus, and blood; tongue nearly normal in size and clean; no pain, nor tenderness in sigmoid now; urine abundant.

Cont. Quinine and Wine.

47th D. 45th T. 5th Nov.—Has improved steadily since last report; now only one stool a day, and that is formed; fit for duty.

Discharged.

9.—Dysenteria Acuta.

F. G. P. Cameron, Æt. 47¾.—Pensioned Sergeant.—Temperament Sanguine.

3rd D. 1st T. 1st Ipecac. 26th December, 1859.—Admitted at 5 P. M., pulse 120, of moderate fulness, regular; heart's action clear, defined; skin hot and dry; tongue white, large, red-

edged; often at stool, with tormina and tenesmus; very tender over cæcum; has been ill ten days, according to his own account.

℞. Ipecac. Rad. Cont. ℈ i.
Aqua. ʒ iss. at 5 and 8 P. M.

4th D. 2nd T. 2nd Ipecac. 27th.—Passed his stools in the bed last night, little, but blood and mucus; nausea, but no vomiting; skin now cool; pulse 84, soft; no pain across abdomen, only a little pain in cæcum; no headache.

℞. Quinæ. Amorph. ʒ iss.
Ipecacuan. ℈ i.
Aqua. ʒ iii. thrice a day.

5 P. M.—Pulse 100, soft, weak; heart's action clear, but weaker than in the morning; no fever; stools entirely mucus and blood, passed at short intervals with much straining.

Rept. Quinæ. and Ipecac. at 8 P. M. with sherry one measure.
Sherry one measure now.

5th D. 3rd T. 3rd Ipecac. 28th.—Had an easy night; several stools, all bile, altogether about 3 pints with a little blood, no feculence; looks well; skin cool; tongue normal; pulse 96; still tormina; less tenesmus; cæcal pain and tenderness much less.

℞. Ipecac. grs. xx.
Sherry ʒ iii.
Quinæ. Amorph. gtt. xl. M. thrice a day

5 P. M.—Several stools to-day, all brown bile, with a little blood, and pus, evidently from ulcers; tongue clean, large; pulse 100, soft, rather weak; skin cool and dry; no headache; rather less tormina; gurgling and tenderness in cæcum on pressure; much tenesmus.

Omit Ipecacuan.
℞. Tinct. Ferri. Muriat. gtt. xx.
Aqua. ʒ iii. every hour till 10 P. M.

6th D. 4th T. 29th.—Slept pretty well last night and had few stools; stools semi-fluid, dark green, feculent, with iron stain beginning to appear, less blood; little tormina, but a good deal of tenesmus; less tenderness of cæcum and no gurgling; skin rather dry, but temperate, except over head which is rather warm; tongue clean, less bulky; pulse 100, of better strength.

℞. Tinct. Ferri. Muriat. gtt. xx.
Aqua. ʒ iii. M. every hour.

4th Ipecac. 5 P. M.—Not so many stools to day, and they were passed with less uneasiness in rectum, but the stools are still almost pure bile with a little feculence, and a great deal of florid blood; pulse 112, soft, jerking; skin too warm and dry; tongue clean, rather red, large, moist; no headache.

℞. Ipecacuan. ℈ i.
Tinct. Camph. Co. ʒ iss.
Acid. Nitric. dil. ♏ xv.
Aqua. ʒ iii. M. at 5 and 9 P. M.

7th D.
5th T.
5th Ipecac.

30th.—Slept pretty well; many stools, but much less griping and tenesmus; stools almost pure blood in clots, with a little mucus and pus; tongue clean, large, moist; pulse 96 to 100, rather small; no nausea; skin too warm and dry.

℞. Ipecac. ℈ i.
Tinct. Camph. Co. ʒ ii.
Acid. Nitric. dil. gtt. xx.
Aqua. ℥ iiiss. M. thrice a day.

5 P. M.—Many stools to-day; has slept a good deal; little straining; little tormina, but little cæcal tenderness; stools pure, thin, serous, red blood, of good odor, with a few particles of yellow fæcal matter; tongue clean, smaller in bulk; pulse 100, of fair strength, no headache; some little nausea and vomiting.

℞. Ipecac. gr. xx.
Tinct. Camph. Co. ʒ ii.
Acid Nitric. dil. ʒ ss.
Aqua. ℥ iiiss. M. at 6 and 9 P. M.

8th D.
6th T.
6th Ipecac.

31st.—Had a very comfortable night; five stools, with more yellow feculence; no mucus nor pus; skin cool; pulse 96, soft, weak; tongue clean; looks well; no headache; little tenderness or tormina, and scarcely any tenesmus.

℞. Ipecac. ℈ i.
Tinct. Camph. Co. ʒ iiss.
Acid Nitric. dil. ʒ ss.
Aqua. ℥ iiiss. M.. at 8, 11, and 3 o'clock.

5 P. M.—Several times at stool to-day; stools scanty but healthy, and quite free from blood, and everything abnormal; a fair quantity of urine passed; tongue clean, clear, bulky; skin too warm over forehead, but temperate in other parts; pulse 84 to 96, soft, rather full; no pain even on pressure, only uneasy weight; abdomen soft.

Omit.

9th D.
7th T.

1st January 1860.—4 or 5 stools last night, and they are copious, pale, and feculent; skin cool; pulse 96, soft, not jerking; tongue clean, forehead rather hot; no cæcal tenderness to-day, but he is tender in sigmoid.

Sherry ℥ ii. at breakfast, dinner, and supper.

Bath.

5 P. M.—Several stools, but little more than air passed; skin rather too warm and dry; pulse 120, soft, jerking; head same temperature as body; tongue clean, rather large, and purple; scarcely any uneasiness in abdomen.

Cont. wine.

10th D. 8th T. 2nd —Only four or five times at stool; stools healthy, semi-fluid; no uneasiness; skin rather too warm and dry; pulse 96; tongue clean; urine pale.

℞. Tinct. Lyttæ. gtt. xx.
Spts. Æther. Nitr. gtt. xv.
Pot. Acetas. ʒ iss.
Aqua. ℥ iv. M. now and at 8 P. M.

11th D. 9th T. 3rd—Good night; two or three stools, yellow, semi-fluid, feculent; no pain; no uneasiness in anus; looks well; skin temperate; pulse 78, soft, free from jerk; tongue clean, normal in size.

No medicine.

12th D. 10th T. 4th.—Two healthy semi-fluid stools; pulse 80, weak; tongue clean, rather large; skin temperate; no uneasiness.

No medicine.

13th D. 11th T. 5th.—One stool last night; looks well.

No medicine.

17th D. 15th T. 9th.—℞. Tinct. Ferri. Muriat. ♏. xv. every second hour.

18th D. 16th T. 10th.—Complains of small external hæmorrhoids.

Ungt. Gallæ Co. ʒ ss.

41st D. 39th T. 2nd February.—Has recovered his strength very slowly, as he has been a very dissipated character. Is now strong.

Discharged.

10.—DYSENTERIA ACUTA.

John Clark,—Æt. 23½, Private H. M.'s 44th—d. d. Madras Artillery—Temperament Sanguine.

5th D. 1st T. 27th December, 1859.—Admitted, complaining of frequent calls to stool and straining.

℞. Pil. Hydrarg. grs. v.
Opii. grs. i. M. ft. pil.

6th D. 2nd T. 1st Ipecac. 28th.—Had dysentery this time last year in the 44th Regimental hospital, which continued four months. Has now been ill six days with frequent bloody stools; much tormina and tenesmus; tongue clean, normal size; pulse 84, soft, of fair strength; skin too warm and dry; sigmoid tenderness; abdomen soft; no headache; stools bilious, dark, feculent, followed by about a table spoonful of bloody gelatinous mucus.

℞. Quinæ Amorph. ʒ i.
Sherry, one measure.
Ipecacuan. grs. xx. M. thrice a day.

5 P. M.—Vomited thrice; says he was 20 times at stool, but there has only been about half a pint of yellow, healthy fæces passed, diluted with urine; skin rather too warm and dry; tongue

clean, large ; headache, but forehead cool ; pulse 96, soft, regular ; less griping ; little pain on pressure any where ; strains a good deal and has much uneasiness in anus.

℞. Quinæ. Amorph. ʒ i.
Ipecac. grs. xx.
Aqua. ℥ iii. M. now and at 9 P. M.

7th D. 3rd T. 29th.—Says he had much straining last night, but the stools are light yellow, feculent, without any blood or mucus ; tongue white, pale-edged, marked by teeth ; skin rather too warm and moist ; pulse 84, soft, of fair strength.

Omit Ipecac.
Tinct. Ferri. ♏ xx.
Aqua. ℥ iii. M. every hour.

5 P. M.—Many times at stool to-day with much straining, and passed about two table spoonsful of blood in small red mucous clots, with a little pus ; skin moist and temperate ; pulse 84, soft, no jerk ; tongue clean, large, red-edged ; no headache.

Cont. Iron.

8th D. 4th T. 30th.—Had a comfortable night ; less tormina and tenesmus ; stools formed, dark green with mucus, and a little pus and blood ; tongue clean, large, red-edged ; no headache ; skin rather too warm, and dry ; pulse 72, tenderness on pressure over sigmoid and cæcum.

Cont. Iron.

2nd Ipecac. 5 P. M.—8 or 10 times at stool to-day ; stools dark from Iron, half formed, with a very little gelatinous mucus and blood, pulse 100, soft, full ; skin rather too warm, and moist ; headache, pains and straining the same ; complains to night of pain going from navel to chest.

℞. Ipecac. grs. xx.
Quinæ. Amorph. ʒ i.
Tinct. Hyoscyami. gtt. xl.
Aqua. ℥ iii. M. at 5 and 9 P. M.

9th D. 5th T. 3rd Ipecac. 31st.—6 or 7 stools last night, a little feculence, dark from iron ; no mucus ; no blood ; says he has less straining, and no uneasiness in abdomen, even on pressure ; skin cool ; headache ; pulse 84, soft, of fair strength ; tongue whitish, red-edged, large.

℞. Ipecacuan. grs. xx.
Tinct. Hyoscyami. ʒ iss.
Aqua. ℥ i. M. thrice a day.

5 P. M.—5 or 6 times at stool to-day ; little tormina and tenesmus ; says he has weight in loins and slight headache ; skin temperate ; pulse 96, soft, regular ; stools scanty, watery, of good odor ;

no abnormal appearance; tongue white, large, red-edged; urine scanty.

Omit. Ipecacuan.
℞. Spts. Ætheris. Nitric. ♏ xv.
Quinæ. Amorph. ♏ x.
Tinct. Scillæ. ♏ xx.
Tinct. Lyttæ. ♏ xx.
Aqua. ℥ iii. M. at 6 and 9 P. M.

10th D. 6th T. 1st January 1860.—7 or 8 stools last night, with uneasiness in anus, but the stools (½ pt.) are yellow, feculent, healthy; tongue white, not so large, red-edged; skin too warm, and dry; pulse 72, soft, free from jerk; no headache.

Tinct. Hyoscy. ℥ j.
Potass. Chlorat. gr. xl.
Aqua. ℥ iii. M. thrice a day.
Sherry ℥ ii. thrice a day.

5 P. M.—12 or 13 stools to-day; anus easier; no pain across abdomen; still has pain from centre of abdomen up chest; tongue white, reddish-edged, smaller; stools healthy, liquid, feculent; skin temperate; pulse 72, soft, no jerk.
Sherry ℥ ii. now and at 8 P. M. with a dose of mixture each time.

11th D. 7th T. 2nd.—℞. Tinct. Camph. Co. ℥ ss.
Aqua. ℥ i. M. thrice a day.
Sinapism to chest.

5 P. M.—℞. Tinct. Camph. Co. ℥ ii.
Aqua. ℥ ii. M. at 8 P. M.
Cont. Sinapism.

12th D. 8th T. 3rd.—No sleep on account of thoracic uneasiness, but no stool all night; skin cool; pulse 88, soft, no jerk; tongue nearly normal in size, pale-edged, rather white.

Blister 4 × 4 inches, to middle of sternum.

5 P. M.—Two stools to-day, formed, healthy; blister risen, still same pain in chest; skin cool; tongue rather red-edged, white; pulse 80, soft, rather weak.

13th D. 9th T. 4th.—One stool last night, semi-fluid, healthy; still a little uneasiness at anus; skin, pulse, tongue, normal; scarcely any pain in chest.

Chops for breakfast; stewed fowl for dinner, with pudding and wine.

No medicine.

14th D. 10th T. 5th.—No medicine.

18th D. 14th T. 9th.—℞. Tinct. Ferri. Mur. ♏ xv.
Aqua. ℥ ii. M. as a tonic every 2nd hour.

10th—Has gained strength steadily since last report; fit for duty.

Discharged.

Having now replied to the 1st and 2nd questions contained in Circular No. 110 of 19th January, 1860, from the Secretary to the Director General, Medical Department, to the Superintending Surgeon, Presidency, I have next to offer a few observations under the 3rd enquiry, "whether any other remedy or remedies were employed in the course of the disease."

Really acute dysentery seldom presents itself in a form to permit of its being successfully treated by any one remedy. But no single remedy, nor combination of remedies, has ever been of such signal service in the first stage of the disease as ipecacuanha, when administered in large doses. No other medicine so soon brings the system into a condition favorable to the restoration of healthy function in the diseased intestine, and by its employment we have the great advantage of being enabled to dispense with bloodletting, and other means which are, to say the least, very unsatisfactory in their consequences.

General depletion by venesection appears to me to be objectionable in dysentery, under almost all circumstances. Even those cases which present a degree of vascular fulness and tension, which would appear to justify recourse to the lancet, require only full and frequent doses of ipecacuanha to remove the plethoric condition. Local depletion from any region, except the anus, can only be of service by its effects on the general circulation, as there is no direct communication between the cutaneous and intestinal capillaries, but at the anal orifice. And, even when leeches are applied to the anus, the relief to the abdominal circulation is but temporary, as the weakened vessels admit an excess of blood by their proximal extremities as fast as it is withdrawn at the distal. If we deplete the vessels at the commencement of dysentery, we may shorten the acute stage; but by debilitating the heart, the succeeding subacute period is attended with a degree and duration of local engorgement which is capable of effecting as much structural lesion, if not so rapidly, as the acute. Then, by diminishing the bulk of vital fluid, we impair the functions of the depurating organs as much as if they continued to labor under excess of blood; for a certain full amount of blood is as necessary to the adequate performance of function and retention of power by these organs, as mechanical resistance is to the action and strength of muscles. Hence by reduction of the proper

blood quantity we induce debility of the secernents, consequent impurity of the blood itself, and tedious convalescence from the spanæmic or anæmic condition we have ourselves established. What we require is, not that a part of the whole mass of blood should be withdrawn, but that the whole mass should be filtered and cleared of impurities, and thereby fitted for restoring the tonicity of the vessels in general, and those of the part affected in particular. It may be questioned if there is ever under any circumstances actually too much good blood in the system. Reason and observation lead us to conclude that whatever plethora occurs, is occasioned by retained blood-waste, and that it is only when secretion is arrested, and the tonicity of the vessels is impaired, by the consequent impurity of the blood, that vascular distension becomes apparent. Restore secretion and nutrition, and, consequently, vascular tonicity and the plethora disappears. This is the normal method of depletion, and far more potent than we might on first sight suppose. In Dr. Dalton's experiments the weight of the excretions was exactly the same as that of the ingesta; or if 91 oz. of food were taken in 24 hours, 91 oz. of water and solids were excreted from kidneys, lungs, skin, and fæcal glands, in the same period. Lavoisier, Sequin and Simon agree that the skin alone can part with 33 oz. of water, with some organic and saline matter, in the same period; so that in the stimulation of the secernents we have a ready and certain means of depletion, seeing that while we thus abstract, the patient is precluded from replacing the loss during the acute stage of disease, either by food or by living on his own solids, as absorption is always in abeyance during the continuance of acute inflammation. Vascular repletion is never permanently arrested by direct or indirect surgical depletion alone; and alterative medicines have always to be resorted to, after bleeding, to keep down the plethoric condition by stimulating the emunctories to diminish the bulk of blood, by rapidly removing its waste. Hence, we are often driven to very objectionable means in the further treatment of the disease, as when we employ mercurials which deplete by making the liver rapidly convert blood-waste into bile, which aggravates as it flows over the local mischief; or by giving ipecacuanha in doses not large enough to have any decided effect on depurating organs, and yet sufficient by their continuance to weaken the already debilitated heart, and so to increase the congestion of the affected capillaries,

which are now more than ever in need of a good cardiac vis-a-tergo to assist their circulation.

In ipecacuanha we have all we can require to enable us to dispense with blood-letting at the commencement of dysentery. From its employment we derive all the benefit which can possibly accrue from either local or general depletion, followed by alteratives, and without any of the evils occasioned by the use of these objectionable means, provided the large doses are not continued after the acute or sthenic stage has been subdued. It is a general depurator and promoter of excretion, occasioning as it does at first a rapid formation of secretion in skin, kidneys, fæcal glands and liver; and, as all these organs appear to be stimulated and in due proportion, too much work is not thrown upon the liver, and the abraded intestines are not irritated by an overflow of bile. Even when the liver does at first act more energetically than usual under the influence of the medicine, the vomitive action usually set up by the large doses often saves the intestines from the contact of the first and worst part of that very caustic secretion. At the same time the force of the heart is abated, and the engorged capillaries of the inflamed part constricted, so that exudation is prevented, and swelling of the tissues of the bowel with the consequent nerve lesion, is removed, provided the medicine has been employed early enough to afford us a reasonable prospect of its effecting such beneficial results.

The good and bad effects of ipecacuanha are best elucidated by carefully observing its influence on the symptoms daily recorded in cases, which would generally be considered suitable for its employment.

While enquiring with this view into the effects of ipecacuanha on the pulse in dysentery, we have first of all to take into account the fact, that although the greatest and most irreparable damage to the intestine is often done while the heart beats only 80 or 85, the pulse, whether medicine be given or not, becomes quicker as the diseased portion of intestine, and the capillaries in general, become more and more engorged by the continuance of the disease, and offer more and more resistance to the heart's hourly decreasing force; and that the ipecacuanha after a time must, independently of the disease, also quicken the pulsations by diminishing the heart's power and increasing its irritability, so that it can receive and pass on only a smaller quantity of blood at each diastole and systole, and therefore has to

beat more quickly in order to circulate the usual amount of fluid. Omitting the first transient quickening of the heart's movements occasioned by vomitive efforts, it follows that although ipecacuanha diminishes the frequency of the heart's action by removing the local engorgement, it occasions increased rapidity of pulse at a more advanced period, when the heart's power has become enfeebled by the drug, and has again to overcome the resistance of congestion now recurring from general debility. An analysis of some of the cases with this view will show how necessary it is, not to continue ipecacuanha after it has done a certain amount of good, and to omit it before it begins to aggravate the disease, by inducing and continuing a local and general adynamic condition. Of the other consequences of debility, original or induced, and their therapeutic indications, I need not speak at present, as they will be best noticed as we come upon them in our examination of each case.

In case 4 the pulse was 84, full, and firm on the day that the exhibition of the ipecacuanha was commenced, and was variable, 78 to 84, weak and full, on the next day. On the 10th day of the disease or 4th day of ipecacuanha treatment, the pulse was 80 in the morning, 96 in the evening. On the following day it was 80 in the morning, 96 in the evening without ipecacuanha. Then the exhibition of two doses of quinine was followed by the pulse remaining at 84 with convalescence.

There were present tenesmus and constant severe pain across abdomen, and soreness along the middle of the abdomen from umbilicus to throat, on the first, and morning of the second day before ipecacuanha was given. After one day of the medicine he had less straining, but the same abdominal pain. But after three entire days on ipecacuanha there was no straining, scarcely any tenderness, and the pulse was at the same time 80, soft, full, and broad, although feculence did not begin to appear in the stools till he had been four days on the medicine. Here the relief from the ipecacuanha was very decided after the third day of its exhibition, but it had then to be replaced by quinine on account of the sympathetic fever having become remittent. The fever would likely have subsided gradually without quinine; but, as the pus was copious, the evening exacerbations must have appeared for several days at least, unless the antiperiodic had been employed. The sudden disappearance of *the pus* after only two doses of quinine, is rather remarkable

at first thought, but it merely proves that the suppuration was kept up by simple congestion of the submucous tissue and not by congestion with interstitial exudation.

In case 5 the pulse rose from 80, varying to 96, before, to 100 on the first evening after ipecacuanha, and fell to 80 next morning, thus proving that variability of pulse, induced by the depressing nature of the disease, may be converted into steadiness by the removal of the inflammation even by a depressing remedy. The effects of the ipecacuanha were in fact in this case less depressing than those of the dysentery, on the two succeeding days the pulse was 75, 70—and it is not further noticed.

On the second day in hospital and before he was put on ipecacuanha, he had slight tenesmus, pain in region of stomach (transverse colon) increased by pressure, without nausea, and darting through to the back. After one day on ipecacuanha there was no straining, but there was the same pain in the left hypochondrium. After the continuance of the ipecacuanha for another day, and the assistance of a blister, the pain disappeared. Much of the improvement may of course be ascribed to the blister, but experience would rather incline me to award the anodyne effect to the continued good impression of the ipecacuanha on the engorgement of the intestine, as the pulse had fallen to 75 and next day was 70. I am certain this pain had no connection with the slight defined swelling which appeared in the muscles of the left hypochondrium on the eleventh day in hospital, or eight entire days after the application of the blister and cessation of the pain.

In this case there was no reason to doubt the patient's statement that the disease was of ten days' duration when he came to hospital, although pus was never discernible. It should be remembered that seamen as a class have more of a hæmorrhagic than a purulent diathesis. The case is further instructive as showing that considerable benefit may be derived from the use of ipecacuanha even when the disease has continued ten days and the pulse has become variable. This man was certainly very weak when admitted, and the pulse had most probably been made variable by the debility induced by his journey to hospital, as much as by the duration of his illness. The improvement of the heart's power which so speedily followed on rest, Dover's powder, and a good tepid bath, favors this view. The doses of ipecacuanha, however, were proportioned to the advanced

period of the disease when treatment was commenced. He had at first 10 grain doses, increased afterwards to 15 grains, altogether 210 grains in five days, and to this cautious application of the large dose system may be ascribed his escape from asthenic congestion or hæmorrhage, and, in either event, consequent reaction and protraction of the illness.

In case 6 the pulse was at first 80 and rose to 96 on the evening after ipecacuanha was first given, but the rise might have been owing to evening exacerbation, apart from ipecacuanha, although that is not very probable, as suppuration, which is the most constant cause of evening exacerbation, when a remittent type is not present from miasmic exposure, had not commenced, and did not show itself till the usual period, viz., the fifth day of the disease, which was in this case the fourth day in hospital.

On the third day of the treatment or second day of ipecacuanha, the pulse was 96 morning and evening. On the fourth day or third of ipecacuanha, the pulse was 92 in the morning, he was much depressed, the feculence was green, and he required to have the ipecacuanha replaced by the sesquichloride of iron. In the evening the pulse was 92 when he was asleep, and 120 when he was awake, proving how great a shock had been given by the ipecacuanha, and how fortunately it was omitted. On the fifth day the pulse was 96 in the morning, 92 in the evening when awake. On the 6th, 88, evening 94; 7th, 96, evening 99; 8th, pulse not noted; 9th, pulse 88, and in the evening 92.

In this case there was little tenesmus and little tenderness on pressing the abdomen, on the day he came to hospital. On the next day, while still under observation and not having taken any medicine, the tenesmus was increased, but there was still little tenderness. After being one day on ipecacuanha, and becoming much depressed by it, there was tenderness in cæcum and sigmoid flexure with much tenesmus. After being another day on ipecacuanha and more depressed, there was much tenesmus, but little tenderness. He was then put on iron, but in the evening the depression had not been removed, he was complaining "bitterly of scalding" at the anus, and the pulse was 120 when he was awake, and was small and weak, as already noticed; from this time he improved steadily on iron.

In the previous case, No. 5, the patient derived much benefit from the ipecacuanha, although it was not exhibited

until the tenth day of the disease. In the present case, No. 6, ipecacuanha clearly aggravated the disease by weakening the heart, lowering the vital power generally, and increasing the intestinal congestion, although exhibited so early as the third day from the commencement of the symptoms, and might therefore have been reasonably expected to prove directly beneficial. This difference of result in the two cases shows that the period of the disease is not a safe guide to giving, or withholding ipecacuanha, and that it is very necessary to look also to the particular signs and symptoms which indicate the sthenic or asthenic nature of the case at the moment, irrespective, to some extent, of its previous duration. In the present case, No. 6, there was one sign of depression which denoted from the first a very decided inability to bear any lowering measure, and which would have effectually hindered me from exhibiting ipecacuanha, had I not been anxious to show clearly in these trials even the bad effects of this often praised remedy in various kinds of acute cases, so far as I could do so without injury to the patient. The sign to which I allude is the green feculence noted on the first day. Not green bile mixed with feculence, although even that is a sign of serious debility, but feculence green of itself, or from contact with some other than bile coloring, and evidently excreted in that state. This always indicates a low condition of the vital power generally, either then apparent, or soon to become manifest, and which can be removed only by tonic restorative medicines—the best of which is some astringent salt of iron. Green feculence has always been regarded as of serious import in the intestinal affections of children, where the color has not been produced by medicine; and was first noticed in dysentery of adults I believe by Sydenham, who says, "When the excrements are green, or black, and very fetid, and mixed with caruncles, the danger is imminent." It is one of the turning points in the progress and treatment of the disease.* In the infant the progress of a depressing bowel-complaint may be noted by the greenness of the evacuations.

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* "The source of the green color of the evacuations has not yet been satisfactorily determined. In some cases it probably depends on the action of the acids of the alimentary canal upon the coloring matter of the bile; but Dr. Golding Bird's investigations have proved it not to be always due to this cause, and have rendered it probable that, in many instances, it results from the presence of altered blood in the evacuations." Lectures on the diseases of infancy and childhood, by Charles West, M. D., 2nd ed., p. 430.

As the infant becomes depressed, the feculence, which is yellow on extrusion, becomes green after a short exposure to the air, and the more quickly the green is developed by the oxidation, the feebler may we consider the child. When the child is feebler still, the fæces are green when passed. By like gradations, though in different sequences, we may measure the decline of vitality in the adult dysenteric case by the color of the stools. When the patient is becoming much depressed, when, in fact, we are beginning to have depression of the organic powers, added to the previous depression of animal vitality, then the coloring matters of the bile and the intestinal glands are changed to green as they are vomited or passed through the intestines; while at a late period if there is hæmorrhage, the venous blood in the stools may become green also. But we have no reason to believe that the green color is imparted to bile or feculence, and to blood, by one and the same process. On the contrary the change of the yellow stools of children to green by exposure to the air leads us to infer, that some organic acid is the cause of the greenness, and as sloughing or impending sloughing, and a green appearance of the dejected blood always go together, we conclude that the evolution of hydrogen from the decomposing surface occasioned the striking of the green in the latter case, as oxygen did in the former.

Be the cause of the greenness of the feculence what it may, the greenness itself signifies local and general debility present or speedily coming, and is but too frequently a premonitory sign of a fatal termination, and demands the administration of nourishing food, wine, and ferruginous tonics. When green feculence appears very early in the disease, and the patient is young, and his constitution unbroken, it occasionally disappears when the inflammation reaches the suppurative stage, apparently from the subsidence of the erythema which has occasioned it, and the remarkable depression which always attends it then passes off, even when Iron has not been administered, and while the patient is still under the influence of ipecacuanha. Such a favorable termination was seen in case No. 2, but the *Vis Medicatrix* is not often so strong as in that individual. From somewhat similar causes, probably, to those above mentioned, green bile is a warning sign in dysentery. A *flow* of brown bile without fæces in dysentery, although within certain limits directly curative, indicates considerable debility, but green bile is suggestive of a decidedly

serious failure of vitality, although it is not so much to be dreaded as the appearance of green feculence.

In case seven, the pulse was 85 on the evening of the first day in hospital, and 85 next morning; but after ipecacuanha was given, it rose on the evening of second day in hospital to 95. On the third it was 76. On the fourth 84 to 88; evening 115. Fifth 80, but in the evening only 76, as the duskiness of the face had that day indicated that the severe pain was being followed by sloughing, as was proved by the slough being detached on the evening of the 7th, and the ipecacuanha had been omitted in the evening. On the 6th the pulse was 72 morning and evening.

In this case there was great pain at the lower part of the abdomen with straining. On the 2nd day he received ipecacuanha; and, on the 4th day, while still on that medicine, there was much pain at the anus and considerable tenderness over cæcum and sigmoid flexure. In the evening there was little tenderness. On the 5th there was less scalding at anus, but pain over cæcum and sigmoid on pressure. The ipecacuanha was omitted in the evening; and, on the evening of the 6th day, there was no pain in the abdomen, even on pressure. In this case the heart was proof against the depressing effects of the ipecacuanha, so far as it was administered; but I think the pulse would soon have become feeble and quick, and the cæcum and sigmoid more engorged, as they had shown a tendency to that state, had the ipecacuanha been continued any longer, especially as the patient had so great a proneness to capillary congestion generally; as evinced by the duskiness of the face on the 5th and 6th day of treatment. The effect of the drug was very favourable to the man's recovery, and I believe that the rectal engorgement became limited, so thatonly a well defined portion sloughed, and no tendency to sloughing in any other part occurred, after he was fairly affected by the ipecacuanha; but I am equally convinced that it was not omitted a day too soon.

In case 8 the pulse was, just before ipecacuanha was given, 84; on next day 84, evening 96, but more from the excessive local congestion, as indicated by flow of blood and dusky face, than from the medicine. 3rd, pulse 84 after 3 ii. of ipecacuanha on the previous day, evening 92; 4th, 76 to 84, evening 96; 5th, 84, evening 100 with palpitation, when ipecacuanha was omitted and Iron substituted; the pulse then became on 6th, 96, action of heart still irregular, as

ipecacuanha prostration had not passed off. 7th, 84, evening 96. The pulse afterwards rose on the Iron treatment with wine, and fell after administration of quinine.

In case 8 there was constant pain in left hypochondrium, extending across the abdomen, and severe tenesmus. He was placed at once on Ipecacuanha. Next day there was little abdominal pain and tenesmus. The Ipecacuanha was continued, and in the evening there was brown flush on both cheeks and under eyes, and severe abdominal pains increased on pressure, with much straining. The ipecacuanha was still continued, and to the temporary injury of the patient. But tenesmus and abdominal pain gradually ceased, notwithstanding the increased tendency to congestion occasioned by the continuance of the depressant, and this favorable issue was occasioned evidently by the bleeding from the intestine, which was slight on the 2nd day of treatment, having steadily increased till fully half a pint was lost on the afternoon of the 3rd day, when it as steadily diminished, till there was very little on the 5th, and congestion was again showing itself by protrusion of the rectum. On the evening of the 5th, the ipecacuanha was omitted, as this second congestion was beginning to be attended with still more unmistakable signs of failure of the heart's power.

This is a particularly instructive case. Green feculence was present from the third day of the attack, or first in hospital, until the end of the seventh day of the disease or fifth in hospital, during all which time he had taken ipecacuanha. It was then omitted as it had been continued long enough to prove that it could not be of any service in the passive congestive form of the disease, and fully too long for the good of the patient, as there was not only the green feculence and copious flow of brown bile, indicating much more depression of the vitality of some part of the intestinal tissues, than was indicated by the pulse; but also *dark* sanguineous exudation proving still further that the engorgement of the bowel was passive. By the morning of the 4th day, moreover, the urine was abundant, and this of course is always noted as a sign of the entire absence of active inflammation. On the 8th evening quinine was prescribed, as the pulse was becoming higher each afternoon. After one evening and day on quinine the pulse fell to 84.

The progress of this case till the evening of the fifth day of treatment, with the value of the green feculence as an indication of the depressed state of the patient, not-

withstanding the deceptively good state of the pulse, and its indication for ipecacuanha, followed by his steady improvement on iron after that date, are corroborative of the importance of the points on which I remarked in case No. 6.

This man was in hospital from 1st to 15th September, 1859, with the same disease, only in a much milder form. At that time he recovered after two days on ipecacuanha; but, being a seaman, required to be detained in hospital till he regained sufficient strength to resume his employment and render him ordinarily safe against a recurrence of the disease.

In case 9 the pulse on admission was 120. On 2nd day or day after ipecacuanha, 84—3rd 96, evening 100. Ipecacuanha was then omitted, not so much from increased weakness and frequency of pulse, as on account of cæcal gurgling on pressure, contra indicating further depressing measures and indicating Iron. On 4th, pulse was 100, evening 112, but no cæcal gurgling. Ipecacuanha was then resumed, as the skin was too warm and dry, and he was passing much fluid blood. 5th, 96 to 100, evening 100. 6th 96, evening 84 to 96. 7th 96. Ipecacuanha omitted as there was copious feculence and no blood, evening 120. 8th 96; 9th, after a diuretic, 78.

There was at first much tenesmus, and he was very tender over cæcum; ipecacuanha was then exhibited. On the 2nd day there was no pain across abdomen, and only a little pain in cæcum. On the 3rd day there was less tenesmus, and the cæcal pain and tenderness were further diminished, but there was cæcal gurgling, a sure sign, in conjunction with others, that the intestine was becoming infiltrated and losing its power, so that the loss of hypersensitiveness in the cæcum was to be ascribed not to resolution, but to excessive engorgement. Had this gone further there would have been cæcal inflation and gangrene. Iron, as already noticed, was then substituted for the ipecacuanha, which was withheld till the flow of florid blood, and disappearance of gurgling, showed that the intestine was resuming its previous safer dynamic condition.

From what I have observed of the good effects of Tinct. Ferri Sesquichloridi in passive engorgement of the intestines in dysentery, and also in fever of a typhoid type, commencing without local complication, but presenting ilio-cæcal

gurgling after a few days, with the marked prostration and brown flush below the eyes that always accompany this infiltration, I am persuaded that that tincture, with or without nitric acid, or the tincture of the nitrate, according to the state of the liver, would prove a valuable restorative in the typhoid of Europe.

Here also there was copious flow of watery brown bile under the influence of the ipecacuanha, affording another evidence of prostration, and one more worthy of reliance even than the pulse.

This man being a pensioner of known intemperate habits, although still of good constitution, in appearance, and the fever being so serious on the evening of his admission as to be almost to a certainty a remittent exacerbation, and most probably malarial remittent, as there was no pus to account for it, quinine was given next morning with the ipecacuanha to remove, or at least moderate, that great aggravator of local mischief.

In case 10 the pulse on 2nd morning in hospital was 84, in evening after quinine and ipecacuanha 96. 3rd 84, iron then substituted for ipecacuanha; evening 84. 4th, still on iron, 72; evening 100, with headache and hot skin; ipecacuanha with quinine resumed. 5th 84, only ipecacuanha continued, evening 96. Ipecacuanha omitted; a diuretic misture with quinine administered. 6th 72, evening 72. 7th compound tinct. of camphor, pulse not recorded. 8th pulse 88, evening 80, convalescence.

In this case, on the 2nd morning in hospital, there was much tenesmus with sigmoid tenderness. Ipecacuanha was resorted to; and in the evening, although the tenesmus continued, there was little tenderness on pressure anywhere. On the 4th day there was tenderness on pressure over cæcum and sigmoid, although iron had been substituted for ipecacuanha on the morning of the 3rd day, as the flabby indented state of the tongue indicated debility from anæmia. After one day of iron, 2 table spoonsful of blood were passed in small red mucus clots, and continued to be passed for 24 hours, till gelatinous mucous, a too warm skin, headache, pain and tenesmus became evidences of the recurrence of a sthenic condition requiring ipecacuanha.

This patient was a large, bulky, soft, light-haired man, requiring some good tonic with the ipecacuanha to prevent congestion under its depressing effects, especially as his

mind was occupied by a belief that he would have much to endure in this attack, having suffered so long and severely from the same disease in 1858. Granting that the severity of this attack was somewhat equal to the former, as he believed it was, the superiority of the ipecacuanha treatment in the early stages, over the usual general treatment by leeches, venesection, and alteratives was clearly shown in this case by the patient being only fifteen days in hospital, or one-eighth of the period that he was under treatment in the previous year. The treatment this time was commenced almost as early in the disease as it could have been, had he been with his corps instead of on leave. As pus first appeared on the evening of the third day in hospital, he was most probably taken really ill only two days before he came to hospital, instead of five days, as he would have led us to believe.

The great danger, therefore, from the large dose treatment is, that the power of the heart may become so much impaired by its continuance, that the brain may soon be too sparingly supplied with blood, and general unmanagable prostration ensue, while at the same time the local congestion increases with the debility. We require, for the removal of the disease, that the heart's force should be reduced to that of health, and the capillaries be moderately constricted; but, if we permit the effects of the medicine to pass beyond those safe limits, or continue the medicine after the natural progress of the disease has materially modified the original type, we place the patient in an asthenic condition in which adynamic congestion of the diseased bowel will be as marked and as destructive as was the dynamic congestion we sought to remove, and far more difficult to treat successfully. Like Tartar emetic, and all other evacuants, ipecacuanha induces, when continued too long, the very state of vessels we find in inflammation, sometimes in the bronchii, sometimes in the stomach and bowels, or in all these parts at the same time. Although Pereira at page 1596 of his great work on Materia Medica says, "its action as an emetic is exceedingly safe, since inflam-
" mation is not produced by it, even when an over dose has
"been swallowed," he admits on the preceding page that Majendie's dissections of cats and dogs killed by its active principle emetina "showed" inflammation of the pulmonary
" tissues, and of the mucous membrane of the alimentary canal from the cardia to the anus." Capillaries which

have been once seriously engorged, are sure to become more than ever engorged if they are too much constricted by the continued use of a sedative. Great constriction under the influence of a sedative is also sooner succeeded by dilatation in vessels already weakened by previous engorgements from disease, than in vessels previously in a normal condition; and it, therefore, follows that the large doses of ipecacuanha cannot be continued above four or five days in the generality of even good sthenic cases without the risk of their keeping up instead of removing the dysenteric engorgement; and, in this respect, it resembles in its effects all other capillary sedatives which act solely by their influence on the vitality of the part, and not by contributing anything which can at the same time permanently strengthen the tissue by entering into its nutrition.

Ipecacuanha in full doses is undoubtedly a remedy of great value in the acute stage of sthenic dysentery, and in those sthenic intercurrent periods indicated by increased dryness and heat of skin, scanty evacuations of blood, and glairy gelatinous mucus, with increased firmness and frequency of pulse, occurring from time to time in the progress of severe cases, after the first acute attack has been subdued; but its employment must be restricted to this state of system. If this precaution be not observed, great disappointment will be sure to follow its exhibition on the first occurrence of an asthenic epidemic constitution, and it will quickly pass out of favor again, as it often has, since its first employment for the cure of dysentery in Paris in 1686. Soon after that date Tournefort noticed that ipecacuanha did not succeed so well in camp dysentery as in private cases; and Geoffroy found it valueless among the poorer classes, owing to diminution of power from bad food, bad air, or the malignity of epidemics, (Dictionaire de Sciences Medicale 1818, Art. Ipecac.) and the same failures have been often experienced since their days, and will be experienced again if attention be not given to the suitability of cases and seasons. As Sir Gilbert Blane well observed in 1821, "there is no maxim more true, and few more practically important, than that the best things are the most liable to abuse. *Nil prodest quod non potest laedere idem*" and, like all other medicines which are of great benefit in certain circumstances, ipecacuanha has been made to do a great deal of harm by its employment in conditions of body for which it is quite unsuited. The fact is, and I say so even at the risk of repetition, the engorgement

must be recent and acute (hyperæmia from local vascular fulness with strength of heart combined,) if the case is to be benefited by ipecacuanha. General debility, however induced, will effectually prevent the successful treatment of the case by ipecacuanha alone ; and in those cases which at first present decidedly sthenic features, and derive great benefit from the first few large doses, a continuance of the medicine, soon of itself induces a state of asthenia which aggravates the local engorgement, exhausts the heart and the depurating organs, and places the patient in peril of death by sudden sinking, or by typhoid exhaustion. When I first arrived in India, I saw cases successfully treated by large doses of ipecacuanha ; but I also saw others in which ipecacuanha aggravated instead of mitigating the disease. I now regard these failures as cases of ipecacuanha dysentery ; and it was this continuance of dysentery, by too long continuance of large doses, and its employment during epidemic constitutions of the atmosphere, which led, I believe, to the large dose system being abandoned for many years.* Perhaps the deaths from sudden sinking, which have occurred from time to time, when the patients have appeared to be progressing favorably, may also have had something to do with the loss of faith in this, when judiciously employed, very valuable remedy.

But, even when judiciously employed, ipecacuanha cannot do everything that has to be done, in many cases, before the patient can have a reasonable prospect of recovery. So long as the inflammation is confined to the surface and follicles of the intestine, and has not affected the submucous tissue, or, in other words, where it has been merely erythematous or erysipelatous, and has not acquired the phlegmonous character in addition, ipecacuanha will in most cases be sufficient of itself to bring the patient to convalescence ; but if the cellular tissue have been affected and the disease run on to passive engorgement of the intestine with

* In some of those cases in which ipecacuanha had been too long continued, the heart became so enfeebled that only colorless serosity came from the bowels, and this serosity deposited a cloud of grey epithelium which was sometimes supposed to be the ipecacuanha powder. We all know how free the dejections are from blood and how often good feculence is passed in moderate quantity, although there has been extensive destruction of intestine, when the patient gets into the dying state, and it is easy to put on the temporary semblance of a cure of dysentery in any case by bringing it to a moribund condition. Many a dysenteric patient has died unexpectedly just when heroic measures have produced good stools and the doctor has been rejoicing. Many a man dies immediately after a dropsy has vanished.

or without a corresponding asthenic condition of the system, the time for ipecacuanha is past, it should not be continued.

If there are pain, tenderness, fulness, straining, the skin cool, but dry, and harsh, with evening febrile exacerbation, and the stools are frequent, not containing tough mucus, and coagulated blood, with or without pus, as in the sthenic state, but consisting chiefly of thin mucus, non-coagulating blood, with or without feculence, and the urine still continue dark and scanty, the ipecacuanha, if not omitted, should at least be intermitted, and a tonic sedative should be had recourse to. The best I have tried is the tinct. ferri sesquichloridi. I haven ever seen any record of the employment of tinct. ferri in acute dysentery except the very slight mention made by Chisholm at page 58 of his work on "Diseases of Tropical Climates," where, speaking of strangury in dysentery, he says "ten drops of muriated iron in a little poppy syrup and water, or a few drops of laudanum and water every half hour, has given great relief." But the general resemblance of dysentery to erysipelas, making allowances for certain differences between intestinal and tegumentary structures, would lead us to infer that this remedy which has proved of much utility in the one should be serviceable in the other. There has been very considerable difference of opinion among medical men as to the value of the tinct. ferri in erysipelas, but I think it would be in more general good repute were it always given in larger doses. If practitioners will administer only three fluid drachms of the tincture in a week, while treating acute erysipelas, they may well join with the present talented Professor of Clinical Medical in University College Hospital in condemning it as useless for the purpose (See Medical Circular, Vol. 15, p. 259). But if they will give it to the extent of 20 or 30 minims every hour, or every 2nd hour, according to the severity of the case, and continue such doses for two days, leaving the patient undisturbed at night, they will soon admit it to be a remedy of no mean value. When administered for the arrest of inflammation, the intention is not so much that it should directly benefit the blood, although its depurating effects are very valuable, as that it should serve as a tonic to the heart, whose power soon begins to fail in all membranous inflammations, as a restorer of hœmatin, and consequent stimulant to pulmonary respiration, and lastly as a depurator of the blood in the least exhausting mode of depuration, by acting on the kidneys. Administered in dysentery in sufficient doses

to ensure these effects, it will be found peculiarly serviceable where the case has been originally asthenic, or has become so from the duration of the sthenic form, or the depressing nature of the treatment. When dysentery is ceasing or has ceased under a free flow of biliary products, the iron and also the food we administer to increase the lung respiration and restore normal performance of functions, occasionally bring back the dysentery and are said to disagree with the patient; but the true explanation is, not that they are acting as direct irritants, but that they are increasing lung respiration too rapidly, and before the kidneys, the organs subsidiary to lung respiration, have had time sufficiently to resume their office, and more work is thus thrown on the fæcal glands and the dysenteric state returns.

During or after the administration of the iron, a diuretic of some kind should be given at night. The best, on account of its hypnotic as well as diuretic action, is the old fashioned mixture of camphor water with tinct. opii. and nitric acid, or better still, tinct. camphor. co. with tinct. opii, nitric acid, squill, and tinct. lyttæ.* Where it does not act as a diuretic, a mixture of this kind is sure to effect nearly an equal amount of good by promoting perspiration. Frequently it does both, proving a good diaphoretic during the night, and causing increased urination on the succeeding forenoon. Real amendment never begins till free diuresis is established, and from the commencement of the disease any opportunity should be seized for restoring the function of the kidneys.† This important point has not, I think, been sufficiently attended to by any writer on the subject. It may be safely affirmed that death never occurs from acute or chronic dysentery without the kidneys being found either so congested, or so deficient in malphigian and tubular structure from former disease, as to be almost entirely unfitted for continuing their functions, except in the not very frequent instances where life is cut short during the progress of the dysentery by the failure of the heart's power, or by peritonitis from or without perforation of the intestine, or, more slowly, by the supervention of hepatic inflammation. Even in those cases where there is a sufficiency of renal structure to carry out the purification of the blood, the kidneys frequently require to be specially solicited to in-

* Mr. Thomas Hope was the first practitioner who employed the mixture of nitric or nitrous acid, camphor mixture and tincture of opium in acute dysentery.—Edin. Medl. and Surg. Journal of 1828.

† The first slight remission of heat of skin is usually the first opportunity.

crease their functional activity before the diseased bowel can obtain rest.

Blood poisoning appears to be more concerned in the establishment and continuance of dysentery than we generally suppose. Over exertion, or exposure to solar heat, or both, occasion an excess of the usual waste of fixed and floating cells and arrest the secretions generally. The body probably gets chilled at the same time from sleeping out of doors at night. The skin fails in its functions. The kidneys have an increase of function suddenly required from them, and are found to be inadequate to the work, either from congestion occasioned by the morbid state of the blood itself, or by deficiency of structure from previous chronic disease, or by congestion superadded to structural lesion. Other organs must now supplement the work of the kidneys by taking on a vicarious duty, or death will ensue from the effects of the accumulating blood poison on the brain, or heart, or some of the serous membranes.

Diarrhœa may be established critically in such a case, and afford the required relief for a time ; but the fæcal glands of the colon usually first respond to the demand for blood purification, by increased excretion. Why morbid blood materials should be drawn to that viscus in preference to the small intestines, was well explained by Chisholm in his Manual of the Climate and Diseases of Tropical countries in 1822. In speaking of the mesocolic arteries he quotes from a paper by a medical friend, who says, "we have the primary "branches of these large arteries going directly and without "tortuosity or arching, to supply the colon and rectum, while "the arteries going to the small intestines form such a conflu- "ence of arterial arches previous to their termination, as to "break the current of blood and act as a wise provision of "nature by preventing its too rapid determination on these or- "gans. It is thus the colon and rectum become most frequently "the seat of dysentery, and the progress of inflamation and "ulceration in them becomes more rapid than in other parts "of the intestinal canal." But we find that as this vicarious activity of the fæcal glands in the colon becomes diminished by their exhaustion, or by their destruction from excessive determination of blood to their vicinities, the waste matters of the circulation begin to seek an outlet through the excreting glands of the small intestines, and diarrhœa begins to accompany the dysentery or almost entirely takes its place, unless the suspended functional activity of the kidneys be

seasonably restored. This is the not unusual chain of causation and sequence in many diseases, although chronic desquamative nephritis and morbid accumulations in the blood are often not suspected to have been the commencement of the diarrhœa, dysentery, or diarrhœal-dysentery, which has resisted all remedies and terminated life.

But it may be asked "If the cæcal glands can thus be called into hyperactivity under certain circumstances by the imperfect performance of the kidneys, may they not equally readily have more work than they can perform, devolved on them by imperfect action of the liver?" The reply apparently must be in the negative. The liver is not to any extent in health a remover of blood-waste like the kidney, but a preparer of certain matters required by arterial blood for the nutrition, according to Liebig's view, of the brain, and perhaps also other parts of the nervous system. What is not required for that purpose, when the balance of functions is duly preserved, is burned in the lungs and removed with other waste by intestinal glands and kidneys. So long as the lungs and kidneys are efficient, any failure of the liver to form bile out of certain detrimental matters, and so render them not only inocuous, but nutritive, does little harm, because they are at once resolved into urea and uric acid and cast out. If the lungs have not the power to change these matters, which should be used by the liver, death is speedily the result. On the other hand, if the liver act well and bile get into the blood faster than it be turned to profit or destroyed, death must also be the result, unless it can be purged off by the bowels, or passed unchanged by the kidneys. In either case dysentery will not be the termination. In the event of the functions of the liver being impeded by contraction or engorgement, dropsy or intestinal hæmorrhage will be the result rather than dysentery. Neither does bilious purging produce that disease. It gripes and irritates and scalds the anus, but no worse effects follow; and it is well they do not ensue, for if these were the consequences of a cholerhœa, we would not be justified in employing ipecacuanha in dysentery, seeing that it relieves the system mainly by forcing the liver to throw off impurities through the intestines as bile and heterogeneous waste. If either vitiated acrid bile in moderate quantity, or good bile in immoderate quantity, could irritate so as to produce ulceration of intestines, those nearest the liver would be the first to suffer in biliary fluxes and would

suffer more severely. The very reverse is the case in dysentery, to whatever extent the biliary secretion may be altered either in quality or quantity. The small intestines escape entirely in all acute, and also in moderately severe cases, except in a few instances where the lowest end of the ileum is affected, as it may be in any case by spreading of erythema from the cæcum through the ileo-colic valve. The seat of acute dysentery is always some part or the whole of the large intestine, and the lesion, to whatever extent it may proceed, is entirely owing to engorgement of the follicular capillaries, occasionally leading to the death of themselves and the tissues in their vicinity, if it be not at once arrested. Cases do occur both in dysentery and diarrhœal-dysentery, where ulceration is begun and continued by the peculiar irritating smarting properties of the blood-waste exuded by follicles; but in such cases there is at first no decided engorgement and want of feculent excretion, as in the commencement of real dysentery, but plenty of thin feculence, and therefore no engorgement. The distress occasioned by this is greater and greater as it approaches the anus, till the irritation there is intolerable, because the excretion which has these noxious effects is secreted by the whole tract of large and often, also, of small intestines, and therefore is in greatest abundance, and more hurtful by its quantity, the further it descends in the bowels. Such cases soon end in ulceration, but ulceration so occasioned is almost always confined to the sigmoid flexure and rectum; moreover, in their treatment, engorgement is a secondary and rather remote consideration. The first and most pressing object is to expel blood-waste, which can thus form acrid excretions, by as many channels as possible, so that their irritating effects in their discharge from the body may be diffused and not allowed to centre on the lower colon.

Not only does the liver not induce dysentery either by defective action or over action, but it is the organ to whose resources we chiefly look for the removal of the sthenic form of that disease. It is a law in physiology that hyperactivity of lungs and liver cannot exist together, and that to increase the activity of either apparatus we must diminish the action of the other. So long as active lungs are provided with sound active kidneys to remove the waste occasioned by respiratory activity, the system is safe, and may, for a time at least, dispense with the aid of any other decarbonizing organ. If the power of the lungs be diminished, there will be less necessity

for kidneys, but there will be a greater demand for functional activity of the liver, the great vicariate both of lungs and kidneys, as we see in the lower animal series. If the power of the lungs be much increased, and the kidneys cannot carry off the respiratory waste, it must find its way out of the body either by the fæcal glands or liver and skin; and as in dysentery we have increased action of lungs with defective action of kidneys, and the fæcal glands have ceased their functions, the liver is the only organ of importance to which we can appeal to carry off excrementitious matters, while we give rest to the lungs, kidneys and fæcal glands, and save the colon—and now the ipecacuanha helps us nobly. It diminishes pulmonary respiration to any desired extent, and step by step as it lowers that respiration, it increases respiration by the liver, and the patient becomes for a time a cold blooded animal, till the lesions of his system are repaired, and he is fitted again to perform without risk the functions of a mammalian.

Of the necessity for administering quinine in acute dysentery, when the continued symptomatic fever has become remittent after the commencement of suppuration, or has been remittent at an earlier period from some miasmatic complication, I need not do more than remark that ipecacuanha can only remove the more acute symptoms, and prepare the system for whatever medicines may be required to meet the complications.

Several serious complications might, I think, be averted were patients permitted to have a rather better diet than what is usually considered sufficient and safe in acute dysentry, and at an earlier period. Although remittent fever, coming on after suppuration commences, frequently requires quinine for its removal, a diet of broth, or egg posset, two or three times a day will often do as much good as quinine, and save the patient from the risk of other and more serious consequences than remittent. We are apt to suppose that anything but fluid diet is incompatible with ipecacuanha, but in a large proportion of cases the digestion of soft solids proceeds comfortably in spite of ipecacuanha when the state of tolerance has been somewhat established, although the dysentery be only partly subdued. The stools, too, prove that digestion is very perfect in most of such cases; but even were it rather imperfect, which it seldom is, it is better to have the patient well nourished at the expense of a little food being ejected upwards or downwards, than to

run the risk of further blood poisoning by absorption of his own vile body. There would, I am convinced, be fewer hepatic abscesses from absorption of pus and fœtid exudations, just as the acute inflammation is terminated, were the veins daily filled with wholesome nutriment. They do not absorb filth when they can obtain fresh nutritive materials, but if these are withheld, the other will be imbibed by them, for they *must* perform their functions. Were nutritive food more generally given at an earlier period, there would also be fewer instances of the acute stage passing into chronic, from the spanæmic condition of the patient not permitting the healing of the ulcers. Few diseases impoverish the blood so seriously as acute dysentery, for there is from the first, in all well marked cases, considerable daily loss of blood; and, in the second and third degrees of change in the mucous membranes, there is also very copious and constant albuminous exudation. The consequence is, there is little reparative power and little reparative material to fill up the ulcers; and, like all other sores in enfeebled bodies, they pass from weak anæmic to indolent, cease to granulate, acquire a coat of exuded fibrine which protects them from injury, and remain in this state for uncertain periods, keeping up more or less chronic irritation, varied by acute intercurrent periods, and requiring a great variety of treatment. Much of this can be prevented by affording a meat diet to the patient the moment the febrile symptoms are fairly over, and so supplying the capillaries with plastic material for the filling up of the sores, and the heart with the power necessary to prevent chronic congestions and exudations.

In the above observations, derived from the consideration of the most important of the cases, I have avoided any particular attention to the vomitive effects of the ipecacunaha, and its power of restoring healthy secretion, as evidenced by feculence and perspiration, as the force of my remarks on what I believe to be more important and less atttended to points, would have been materially obscured by interspersing them with matters which appeared to me of secondary importance, and, therefore, not requiring in this report more than the general notice I have bestowed on them, while speaking at first of the depurating effects of the medicine.

The 4th head of enquiry is "The period of convalescence after the ipecacuanha treatment as compared with that under any other course," and I regret to say that I cannot offer any

satisfactory reply. The period of convalescence is decidedly shorter in the cases treated by ipecacuanha. How much shorter, it is impossible to say accurately; for, even if statistics were brought to bear on the subject of duration of dysentery under this and other remedies, no comparison could be made worthy of any reliance; as the influence of seasons, and previous presence or absence of organic changes in the viscera, the kidneys and heart especially, could never be adequately estimated; and these, we know, have more influence than medicine on the progress and termination of the disease. We can only arrive at an approximation to accuracy as to the value of ipecacuanha compared with other medicines in dysentery, by the general impression which has been the result of individual experience of many methods, and by reasoning on the probable influence of various plans of treatment on diseases in general. The impression on my mind is in favor of this plan of treatment; and, as the probabilities are all on the side of that being the best remedy which most decidedly shortens the acute stage of this disease, without wasting vital fluid, it necessarily follows that a high place in the therapeutics of sthenic dysentery must be awarded to ipecacuanha.

The average time in hospital of the cases treated by leeches, castor oil and laudanum, followed by small alterative doses of ipecacuanha and blue pill, with or without opium and succeeded by nitrate of silver, was in 1857, 12.53 days, and in 1853, 21.30 days. The time in hospital in 1859 under general treatment according to circumstances was 22.93 days. On the ipecacuanha treatment the time was 25.9 days. But it is as difficult to make a correct comparative estimate of degrees of success by the period in hospital as it would be by period of convalescence. For many elements have to be taken into account, although not recorded in the Hospital Journals, as season, constitution, duration of the disease before being submitted to treatment; and last, although also of much importance, the practice of different Medical men in retaining patients in hospital till they are strong enough for duty, or discharging them while they are still weak.

The mortality in all the cases of acute dysentery in this hospital was, in 1857, 12.19; in 1858, 10.25; and in 1859, 3.3 per cent. Only one case was lost in 1859, and that was a child about three years of age who had been much neglected by its mother, and was in a very hopeless state when admitted. It

was treated on general principles. On the ipecacuanha treatment, the percentage of deaths to treated was 0.0. The low mortality in 1859, however, on any method of treatment, must, I think, be ascribed to the remarkable mildness of the seasons, rather than to any superiority in our therapeutic management.

ART. IX.—*Observations on the health of the Prisoners confined in the Bellary Jail, from* 1851 *to* 1855. By E. W. EYRE, Esq., Deputy Inspector General of Hospitals.

IN the Annual Report for 1851 I remarked that the health of the prisoners for some years past had continued to be satisfactory, and gave as some reasons for this,—the favorable site of the jail, elevated, and on gravelly soil, and the climate of Bellary as generally conducive to health. There are no great extremes of temperature; dryness characterises the climate, and though the addition of moisture would make the atmosphere pleasanter to the feelings, whether it would add to health might be a question.*

There is an important consideration in the health-state of prisoners,—whether they are natives of the District, or foreigners. Here they are, nearly all, natives. How injurious is the effect if they are foreigners, I had an opportunity of witnessing in the jail at Ganjam in 1836, then occupied by Khond rebels. Removed from their native hills to the plains, they sickened and died in great numbers. Mental depression co-operating with change of climate.

Pneumonia prevailed in 1851, accompanied with marked asthenic symptoms, precluding the use of depressants and calling for the early administration of stimulants. The jail had for several years been unvisited by cholera while it was prevailing around; this year, however, a few suffered; three while within the jail, and three who were working on the roads. Several deaths were due this year to old age, though having been admitted with some ailment, they were returned under it. Even when not advanced in years, deaths occur among prisoners, not from any actual disease, but exhausted vital power.

Per cent. of sick to strength (average).....59·64
„ „ of deaths „ do ..... 4·67
No of cubic feet in the cells, per prisoner 274.

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* A Meteorological Table is given in the Appendix.

1852.—A very healthy year. Last year the prevalence of pneumonia was remarked; this year there was but one case, in a robust young man; the symptoms sthenic in character. He was bled and recovered rapidly. This was the only case during the five years I was in charge, in which general depletion was employed, not because of any theory on the subject, but because the symptoms did not call for such a measure. There was no cognizable difference, in the atmospheric states between the two years to account for the prevalence of pneumonia one year, and its absence the next. But, the occurrence of the disease from causes other than the effect of cold air on the lungs has been elsewhere observed, and leads to the conjecture that it may be due to a particular morbid condition of the blood, expressed upon the lungs.* Guinea worm prevailed much this year.

Per cent. of sick to strength (average).....39·87
,, ,, of deaths ,, do ..... 1·26
Cubic feet per prisoner 400.

1853.—Although there was much sickness in Bellary this year, the prisoners did not suffer from it to any great extent. Cholera was around, but the jail escaped. On the first appearance of the epidemic the prisoners were withdrawn from the roads near infected localities. The absence of bowel-complaint, that scourge of many jails, was remarked on in this year's report. During five years, only 25 cases of *primary* diarrhœa were noticed; as a sequel of other diseases it occurs, particularly in the aged. For the prevalence of the disease in some jails the cause is often sought for in the diet, but this has always been of the same kind here as in Cuddapah, for instance, where dysenteric diarrhœa has been frequent and fatal. The exemption has not always obtained in Bellary, where it was rife some years ago, when the crowding of prisoners and imperfect ventilation poisoned the air in the cells.

Per cent. of sick to strength (average)..... 60·66
,, ,, of deaths ,, do..... 2·60
Cubic feet per prisoner 300.

1854.—*Cholera Epidemic.*—12 cases among the prisoners out of a strength of 412. The treatment of these, and other cases at the time, was conducted on the expectant method, that is, by good nursing and no medicine, and with a more favorable result than I have witnessed from the thousand

* I believe that the fatal "lung disease" of some animals is not ascribed to atmospheric causes.

and one remedies that have been employed,—with extraordinary results in the hands of the discoverer, but in the hands of no other. The particulars were given in the "Indian Annals of Medical Science," No. IV of April 1855.

This year there appeared a singular and fatal disease, a disease of which it might be said,—as of Angina Pectoris, "We are sure of what it is as an assemblage of symptoms. —we are not sure of what it is as a disease."—(Latham). I shall give a summary from the reports made of it. It was in July that some of the prisoners out of, and in hospital, complained of swelling in the lower extremities, one or both of the feet, in some extending upward as high as the knees; the swelling hard, tense and painful. In other cases the wrists and fore-arms were swollen. In all, there was puffiness of the face. A spongy state of the gums was found in a few; in most, exsanguineous gums and tongue; a small pulse, and feeble action of the heart. The only deviation from normal secretions was, a scanty amount of urine, but this was not general. The ages of those affected varied from 20 to 60. Period of confinement from 1 month to 19 years, but the majority had only been a few months incarcerated. They were all natives of the Ceded Districts. The disease prevailed from July to October, then ceased for a while, but re-appeared in November. There were in all 28 cases, of which 13 ended fatally.

The subsequent course of the disease was marked by no apparent change till, after a period varying from two to ten days, the patient was found breathing with difficulty; in three, signs of effusion into the pericardium were discovered. When dyspnœa set in, death was rapid, in some, sudden. In the three cases where fluid in the pericardium was diagnosed, it was found in large quantity at the examination after death, and besides, deposit of lymph to a large amount on the reflected portion of the pericardium. In two other fatal cases examined, there were found no morbid products in the heart, only effusion into the abdominal cavity. I much regretted that *post mortem* examinations could only be made on these five, but circumstances prevented them in the other fatal cases. In the chronic cases a singular appearance presented, in patches of black discoloration of the skin affected with œdema. This occurred in thirteen. What was the disease? I at first thought it might be beriberi; further acquaintance with it led me to abandon this view; there was absence of the peculiar gait, and numbness of the lower extremities so

characteristic of beriberi. I found a report of this jail for 1833 and 1834, (it is appended to Dr. Malcolmson's work on Beriberi) which describes an epidemic malady that prevailed in those years, and so far as the dropsy, with tendency to fatal termination, was concerned, it appears to have been very similar to the present one. There were then, as many as 98 admissions with 51 deaths. The prevalence of strong dry westerly winds was assigned as the cause; it was a season of drought with consequent scarcity, crime, and over-crowding of the jail. But such causes have been in operation several times between 1834 and 1854, without any re-appearance of this disease. Dr. Malcolmson doubted that it was beriberi, and Garrison Surgeon Smith "did not consider the cases to be examples of that disease." Dr. Turnbull, the Medical Officer in charge of the jail at the time, writes, "Several of the cases resembled in many of their symptoms, beriberi, but I rather regard it as pericarditis." I will give briefly a few of the cases of 1854.

No. 1, Æt. 35, 8 months in confinement. While under treatment for slight rheumatic affection, was found to be breathing with difficulty; pulse rapid and small; temperature of surface low. There was clear resonance over the chest except at the præcordial space where the dull sound was preternaturally extended; impulse absent and valvular sounds only heard over the 3rd costal cartilage. He died suddenly in the evening. *Autopsy.* Right lung congested, the left emphysematous. Pericardium distended by 23 oz. of serum, deeply tinged with blood. The loose pericardium coated over with layers of lymph; and the reflected also, in form of net-work. Posteriorly, adhesions between the two pericardial coats. The valves normal.

No. 2, Æt. 60, 12 years in confinement. Admitted 3rd August with diarrhœa. Face puffy, both legs swollen, hard and painful. Urine scanty, of alkaline reaction. Sp. Gr. 1·025. Four days after admission was found breathing with difficulty. No disease could be diagnosed in the lungs or heart. The next day the abdomen was a little distended with fluid. He died suddenly. *Autopsy.* Lungs and heart quite healthy. 28 oz. of fluid in the abdomen, but no disease of any of the organs there. There was another case similar to this. Abdominal effusion, but no organic disease.*

* Ascites unconnected with renal, hepatic or peritoneal, disease is of rather rare occurrence.

No. 3, Æt. 38, 4 months in confinement. Admitted with left leg swollen and painful. No other complaint. Was carefully examined daily, but no new symptoms appeared till a fortnight after, when dyspnœa came on. Friction sound heard over the cardiac region. A few leeches relieved, but dyspnœa returned next morning. Cardiac impulse wanting; extended præcordial dulness. Valvular sounds normal: augmented respiratory murmur in both lungs. Died shortly after. *Autopsy.* Pericardium distended by 40 oz. of serum tinged with blood. The reflected pericardium covered with thick layers of lymph; the loose portion adhering firmly to the contiguous diaphragm and pleura.

In the 5th case examined after death there was found only a small quantity of fluid in the pericardium; no lymph formed; no fluid in the abdomen and all the organs healthy, and yet, the patient had, like the other cases, dropsical swelling; suffered from dyspnœa and died rapidly. The remote, or predisposing causes of this disease, are obscure. The diet and jail discipline were the same as heretofore, and conducive to the maintenance of health. There was small space doubtless, but it had been for several years less, without any appearance of a similar disease to this. Frequent inspections were made, but the generally healthy condition of the prisoners was striking. The disease then, in the ratio of 5 per cent. to strength, seemed to attack a certain few, perhaps, constitutionally weak.

The proximate cause—the disease itself. Dropsy was the prominent, indeed the only appreciable symptom in the great majority of the cases. The pericardial affection was no essential part of the disease; it was absent in 2 out of the 5 Autopsies and of the 37 cases, altogether treated, *symptoms* of its presence appeared but in 3. Possibly, however, pericarditis with effusion may have existed, as we know how obscure are the symptoms, manifested sometimes only just before death. Every case, I may observe, was examined daily with the view to detect the first approach of pericarditis. I have spoken of the similarity in some respects, with the disease that prevailed in 1833-34, but there was this difference, that then, cardiac symptoms predominated; indeed it was designated "inflammatory cardiac disease." Dr. Turnbull records, "I have dissected 7 more cases, and in every one were found strong marks of inflammation of the heart and of the pericardium," and speaks of the subjects of the disease being "healthy, strong-looking men." Among

my cases there were certainly some to whom this description would apply, but the generality were the reverse, had low vital power and feeble circulation, and to cachectic disposition of the body I ascribed the dropsy; at the same time it must be admitted that the lymphous effusion in the extremities and on the pericardium gave evidence of inflammation, though of a very sub-acute character.

The treatment of this disease will not occupy long. It was no more successful on this occasion than in 1833, when it is stated "Many cases ended in death spite of all treatment." The effect of mercury,—at that day *a sine qua non* in the treatment of nearly all diseases, and often enough resorted to as "the remedy of necessity," is thus recorded. "Calomel lessened the symptoms for some days, but they returned with increased violence and destroyed the patient!" Diuretics had little effect on the kidneys. Elaterium was most effectual, but the removal of fluid did not affect the progress of the disease. The urine was tested and found, though scanty, to be of normal reaction, and specific-gravity, and albumen was never detected. Regarding it as a cachectic state with impoverished blood, the means were directed, to remedy this, as far as possible, by suitable diet; the patients were warmly clad, and had occasional warm baths; were protected from the strong winds, and due ventilation attended to.

Per cent. of sick to strength (average) .....64·56
,, ,, of deaths ,, do. ... .. 6·55
No. of cubic feet per man 259.

1855.—The failure of rain and consequent scarcity led to much crime in the District, particularly gang-robberies, and brought so large a number of prisoners into the jail that it became necessary to establish a temporary prison, but even with this relief there was over-crowding. Notwithstanding, the health of the prisoners, *generally*, was good.

The peculiar disease noticed last year continued through the early part of this, but with a less tendency to fatal result, as out of 18 cases only 5 proved fatal. The symptoms resembled those of the former year. Puffy swelling of the face, solid œdema of the legs, sometimes of the forearms, with black discoloration of the skin in one case extending from the feet to the thigh.* In not one case did cardiac

* Dr. Addison's views, connecting melanopathy with disease of the super-renal capsules had not then been promulgated. In the cases examined after death the kidneys were not overlooked, though I cannot say that particular attention was paid to this portion of them.

symptoms present. The supervention of diarrhœa was the cause of the fatal termination.

There were many admissions from wounds, inflicted by villagers on robbers, and very severe many of them were. In *their* hands justice was not tempered by mercy.

Ulcers of a grave character appeared this year for the first time as the records shew, since 1829. Foul sloughing ulcers, such as are known from the localities where they often prevail—as Aden ulcer, Straits ulcer, &c. The disease first appeared in June, 10 cases were admitted that month; 6 in July; 4 in August; 3 in September. October passed over without a case, but it re-appeared in November and lasted till December. 31 cases in all; 4 ended fatally. In 14 the foul character of the ulcer was marked from the first. In 8, simple ulcer, rather *abrasions* (such as are common among prisoners from the chafing of the fetters) degenerated. In 6, the patients were in hospital at the time with guinea worm; 1 with boils, 2 with common injuries. The subjects of the ulcer were of all ages, from 20 to 50: periods of confinement, from one month to ten years. At first there was slight constitutional sympathy, and the general appearance of the patients not markedly indicative of bad health. Diarrhœa supervened in the cases which ended fatally. I need not describe the ulcer for it differed in no respect from the characters of sloughy ulcers as detailed in works on Surgery, and from what has often been described in reports of Jails. At an after period the health suffered much; appetite was lost; nights sleepless; a low febrile state was present. So low was the vital power, that after separation between the living and dead parts had taken place, the average time for the slough to come away was 66 days. I could not assign any satisfactory cause for this form of disease. It is true the jail was crowded, but if this originated any morbific matter, it is singular that it should have affected only 31 out of 700. Not a female prisoner suffered, though occupying the same building as the males. Frequent inspection of the prisoners did not lead to the impression that they were sickly. As in the dropsical disease, it affected so few in proportion to the number of prisoners incarcerated that the term epidemic could hardly be applied to either. A moist atmosphere has sometimes been assigned as the cause of these ulcers, but Aden is characterised by dryness, so is Bellary.

With regard to treatment, every local application that has ever been tried or recommended, was put into use, but with-

out any benefit. A certain time was required for the slough to separate, and this was little, if at all accelerated by any topical means. Chlorate of Potash was tried having been well reported of in the treatment of sloughing ulcers in the Crimea, and seemed to do good; but, at the time of trial a change had taken place in the weather, from long continued dry winds to rain. In November when the weather had again become dry, the Chlorate of Potash was again brought into use, but with no apparent effect. The principles of treatment pursued were, to support strength and allay irritation. The sick wards were often scraped and white-washed, and the greatest attention paid to personal cleanliness. During the day the patients were under a pandal in the open air; and the strictest separation of themselves, and all appertaining to them from other sick, was maintained.

Amputation has been suggested. I should not like to have resorted to it in any of these cases; but the separation of the slough by the knife might shorten the constitutional irritation by removing earlier than the efforts of nature can do, a source of irritation and contamination of the blood.

Per cent. of sick to strength (average).....76·63
„ „ deaths „ do. ..... 2·65
Cubic feet per man 200.

Dracunculus has always been a troublesome complaint in this jail. From 1842 to 1855 there were 378 cases, averaging 29 yearly, but in varying frequency each year, thus, in 1845, there were only 10 cases, in 1855-sixty two. There is nothing remarkable in this, for we know that some of the animal species, the insectivorous tribes particularly, abound some years, and are few, or altogether absent in others. The worm has its seasons of quiescence and activity: of the number, 378 cases, 32 only occurred between August and December; the rest between January and July; April and May being the months in which the worm is in greatest activity. A special report of this troublesome complaint was called for in 1841 and again in 1852. Considerable pains were taken to discover the source of the animal, but little that was satisfactory, far less conclusive, was arrived at. The natives themselves assign many and very opposite causes, but as may be supposed, ascribe to water the first place. This received special attention; the microscope was in use, and all the water used at the jail examined, but in

none could anything be detected but the common animalcules, and these were abundant enough in two bowries; one of these, containing excellent water, was also resorted to by other than the prisoners.* If the worm was confined to particular localities, the difficulty in tracing its source would be lessened, but in truth, enquiry shews that it is prevalent in every part—certainly, of the Ceded Districts. Peons and their families suffer, so do the civil inhabitants. Some cases occur yearly among sepoys, and it is found, though more rarely, to affect the European soldiers.

If the embryo of the worm is received into the body through the medium of water, then dhobies should be particularly liable, but on enquiry, I do not find that they are. Civil prisoners, debtors, and females, who, not working on the roads, do not leave the precincts of the jail, but who use the same water as the other prisoners, were found to be exempt from the worm. I am disposed to think that the embryo has its habit at in the soil, and in some kinds, probably more abundantly; but that the presence of water is required to facilitate its introduction within the skin.

Space.—With the average sickness for each year, I have given the space in cubic feet allotted to each prisoner, and the paucity will surprise those who make so much account of cubic feet per man, for it will be found that the health was preserved with no more than 250 cubic feet. Even in 1847 when I ascertained that there were only 199, the jail was healthy. In the hospital each patient had usually 600 feet. There is, however, a minimum of space it is not safe to come down to; for instance, in 1834, so crowded was the jail there were but 67 cubic feet to each prisoner, and, as might be expected, there was much sickness; but, it is to be remarked, there was very defective ventilation *then*, while of late years this essential having been supplied, 250 feet has been proved to be sufficient. Ventilation is maintained by barred openings in the doors and perforations in the roof of the cells, so that there is free ingress of pure air and egress of respired air constantly going on. It is to be borne in mind too, that the prisoners are within the cells only during the hours of sleep, the rest of each day in the open air. In erecting new buildings of late years in India for barracks and hospitals, has not undue

* An analysis lately made of the water from several bowries in Bellary, shewed that when brackish there were no animalcules; the purest water contained them.

importance been given to space, thus leading to the erection of buildings unnecessarily spacious and consequently costly? Perfect ventilation would obviate this, and reduce the scale of 1,200,—1,400 feet considerably, without any detriment to the health of the inmates; as regards hospitals, I should say with advantage to the sick.*

Diet.—This consisted of the grains which form the staple food of the people of the Districts, wheat and cholum. The full allowance for prisoners at work, was 1 lb., 10 oz. per diem. One day in the week, ½ lb. of rice was substituted; 4 pice a day was allowed for condiments, and, as an indulgence, some meat was given on Sundays. I had never occasion to recommend any alteration in the scale of diet; it kept the prisoners in good condition without pampering them. If the Medical officer listens to the complaints made, he will be importuned at each weekly inspection to give rice, instead of the other grains, on the plea that they do not agree with their health, but he should not without very cogent reasons give his recommendation to measures that tend to lessen the punitive effects of incarceration. The sick were allowed whatever their Medical attendant considered necessary.

It was formerly a contested point, if tobacco could at once and entirely be withdrawn without injury to the health. The trial of withholding it was made, and no ill effects resulted. I never met with a case in which I considered it expedient to recommend that the use of tobacco might be sanctioned,—not so with regard to opium, this I have had to give in two or three instances where there had been a long indulgence in its use, or rather, abuse.

Though it falls not within the province of the Medical officer of a jail to comment on the punitive system that obtains, yet its inefficiency cannot fail to strike even the casual observer. Hard labour is a misnomer; light work would be more appropriate; the saunter there and back, sufficient food, and indulgencies connived at by the guard of peons—with a large allowance of sleep at night; these are not very appalling to a native. Labour with segregation, within the walls of the prison, is the really punitive measure required.

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* In our more Northern stations, in the cold season, when the nights are chilly, spacious wards are not adapted to the treatment of some diseases,—bowel-complaint, for instance.

In the per cent. of sick 58 cases of punitus are struck out, as certainly not coming under the head of disease.*

Table No. I.

Fevers.		Rheumatic Affection.		Bowel Complaint.		Diseases of the Lungs.		Cholera.		Guinea-worm.
Admissions.	Per Cent. to all Diseases.	Admissions.	Per Cent. to all Diseases	Admissions.	Per Cent. to all Diseases.	Admissions.	Per Cent. to all Diseases.	Admissions.	Per Cent. to all Diseases.	Admissions.
179	17·86	91	9·08	55	5·48	33	3·29	18	1·79	192
†	16 81		6·41	...	4·93	...	3·50	...	...	.....

It has been remarked that by taking the *average* strength during the year a correct ratio of sickness and mortality will be found, but this does not afford the actual sanitary condition of the jail; to obtain which the aggregate strength should be taken. The difference is shewn, in—

Table No. II.

	Per Cent. of Sick.		Per Cent. of Deaths.	
	To aggregate strength.	To average strength.	To aggregate strength.	To average strength.
Bellary Jail.	20·4	79·0	1·8	4·46

From the published Report of Jails in the Madras Presidency, for 1858-59, it appears that the Bellary (among the larger jails) has a smaller number of admissions to strength than 28 jails, and fewer deaths than 13. In 133 jails in the Bengal Presidency in 1853, there was only one below Bellary; in all the others, twice and thrice the number of sick; but, in 33 jails, the deaths were fewer than in Bellary jail.

The deaths in the jail for the five years under review were in the ratio of about 14 per 1,000. In the last published Report of Prisons in England it was 18 per 1,000.

With a view to ascertain the extent of vaccine protection afforded to classes of natives who do not come directly under European control, I examined 2,067 prisoners, and found 1,581 marked with small-pox; 308 had doubtful marks of vaccination; 118 only had satisfactory marks.

* Russian Army Surgeons convert Punitus into Vibices—which is one way of simplifying the Returns.

† Civil population of Bellary who attended at the Civil Hospital in the same years.

APPENDIX.

I cannot advance more for this table than an approximative correctness, nor, till such time as well instructed and paid agents are employed to register Meteorological Observations can more be expected. The mean temperature is found to be 81°. We hear of the climate changing, but on referring to a Register kept in 1832, I find that 81° was the mean then, so it was in 1841. The daily range is found to be small. The mean of humidity (100 saturation) 60°. Considerable variation in the annual fall of rain is apparent. From 1841 to 1860, the average, 21 inches, 3 cents. This has been diminishing of late years. The average from 1841 to 1855, was 23·50, but in the last five years, only 15·13. Dry crops alone being cultivated about Bellary, a moderate supply of rain suffices if it fall at the proper season, but the scanty supply of water for all other purposes is a serious drawback to Bellary and urgently calls for a remedy. On several occasions during the last 30 years, the store of water in the tanks and bowries has been so small as to threaten a total drought. Before the rain in June, this year, the inhabitants of the town were reduced to the greatest straits. Crowds sat round the shallow pools all night to scoop up the water as it oozed out of the ground.

The influence of trees over rain fall has had much evidence brought forward in its support. Still, it is probable there is another and more important element concerned. (Electricity ?) Bellary is certainly more wooded now than it was a few years since, and yet rain has been diminishing. Have the severe droughts in Australia, notwithstanding the forests that overspread the land, ever been accounted for? A late writer on the subject considers that to obtain the refrigerative effect of trees they must be in masses and tall. Such they certainly are not in Bellary.

Meteorological Observations—taken four times daily, between sun-rise and sun-set.

Mean temperature of 7 years	81°
Average maximum of extreme temperature for do.....	84°
do. minimum do. do.	76°
Mean of daily range for 7 years	9°
Mean temperature of wet bulb for 4 years 1853 to 1857....	71°
Mean of humidity for do. do. (100 saturation.).....	60°

Register of Rain in Inches and 100*ths at Bellary for* 20 *years, from* 1841 *to* 1860 *inclusive—Pluviometer* 3 *feet from the ground.*

Years.	1841	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	Average in each month for 20 years.
January....	...	·07	·68	...	·10	...	...	...	...	...	...	...	2·	...	...	...	...	...	...	...	0·24
February..	·02	...	...	...	...	...	·35	...	...	...	...	...	...	...	...	...	...	...	...	...	·03
March.....	·03	...	2·24	·02	1·85	2·08	...	...	...	...	...	...	7·60	...	·56	...	5·17	...	·05	·60	1·68
April.....	4·19	·02	2·30	1·85	·50	...	1·20	1·30	1·75	1·45	...	1·	1·	...	·73	·79	·12	·11	1·20	·50	1·67
May.....	·09	1·89	5·71	1·20	1·	2·60	1·10	4·15	3·80	·40	7·25	3·75	3·35	4·55	·05	4.57	2·29	...	·60	·20	4·04
June.....	4·40	2·75	4·51	3·79	1·80	1·75	4·	·50	·55	·55	...	·95	1·	...	3·24	·67	3·22	·48	·35	6·5	3·38
July	1·17	·60	·56	·28	...	6·05	·90	5·65	3·65	2·35	2·	3·95	·45	·70	...	1·32	·77	·55	1·90	·30	2·64
August.....	6·10	1·74	·69	2·70	...	1·30	1·40	11·50	11·50	5·60	4·70	1·75	2·70	·45	2·11	6·93	...	·16	3·90	1·20	4·62
September.	4·61	8·44	5·04	3·67	3·89	4·90	2·60	5·05	5·05	3·25	3·	10·85	1·50	1·60	2·	1·	·98	1·14	·70	3·5	6·18
October....	5·38	2·21	8·24	5·85	2·55	4·45	8·85	2·30	2·30	7·75	3·25	7·45	·80	9·94	14·	...	7·62	14·23	·20	1·44	7·83
November.	·39	8·	...	·10	·65	·95	·85	...	...	·15	2·	·45	1·	...	...	...	1·10	1·63	1·5	...	1·67 *a.*
December..	·02	...	·40	2·20	...	...	...	...	...	...	...	4·95	...	...	...	...	...	...	·20	...	0·15
Annual Quantity	26·40	25·72	30·37	21·66	12·34	24·08	21·25	20·63	30·60	21·50	22·20	35·10	21·40	17·24	22·69	15·28	21·27	18·30	10·15	13·34	21·3 Annual average.

a. Excluding the extraordinary fall in 1842 the average for the month of November would be only 0·60.

Art. X.—*Annual Report on the Cochin Civil Dispensary, for* 1860. By Francis Day, Esq., F.L.S., Civil Surgeon of Cochin.

The working of the Cochin Dispensary during the past year has been satisfactory: natives came long distances from the interior to be treated for both curable and incurable diseases, having great faith in European Surgery: whilst the benefits of chloroform, being widely known, are as widely appreciated.

Admissions in 1859...Out-patients 4,580. In-patients 376.
„ „ 1860... „ „ 6,347. „ „ 415.

Showing an excess in 1860, over 1859, of 1,806 admissions; out of the 415 in-patients, 96 dieted themselves, or one in $4\frac{1}{3}$, against one in $16\frac{1}{3}$ as it stood in the previous year: consequently, although the number of in-patients was augmented by 39, the expenses of maintenance were Rs. 205-2-1 less.

The year after the establishment of the dispensary, about half the patients dieted themselves: subsequently, the proportion of those who did so, yearly decreased; until at last, the inhabitants of this populous town had begun to consider they had a right to be fed, as well as treated, when in-patients, at the expense of Government; checking this has given rise to considerable ill will, which time will no doubt eventually smooth.

Though no deficiency of medicines appears in the returns, large quantities of Quinine, Cinchona, Acetate of Lead, Opium, Iodide of Potassium, Carbonate of Soda, and other drugs, have been supplied from private sources. From January 1st 1861, persons who do not come to the dispensary for treatment, but send their prescriptions there, instead of to one of the private practitioners, will be charged, (if they can afford to pay) a small sum to carry on the Medicine Fund.

The fall of rain in 1860, was about $84\frac{2}{20}$ inches, the annual average being about 120 inches. The temperature has been above that of 1859, and the strength of the sea breeze during the S. W. Monsoon greater. The severe land winds, usual during the latter half of December, did not begin until quite the end of the month.

The health of the population has improved, scarcity of food being less, provisions consequently cheaper, and work abundant.

During the twelve months under review, amongst the large number of patients resorting to the Cochin Dispensary,

very many interesting cases have occurred. A summary of some of which I propose recording.

Fevers.—This class of diseases is most prevalent during the latter half of the S. W. Monsoon, and the succeeding cold months; and least common in February, March, April, and May, when the land winds have ceased.

Cases of fever in Cochin are, during the hot weather, very frequently due to visceral irritation, often caused by intestinal worms: in the monsoon time, by the sea breeze: and during the cold months, by the land winds.

In the months of June and July my attention was particularly drawn to some cases of apparently insidious chest affection, occurring in Europeans, East Indians, Hindoos, Mahomedans, Native Christians, and Jews: some came from Cottayam, some from Trichoor and other inland stations, but by far the majority from Cochin. Above forty instances, during the S. W. Monsoon, came under treatment. Whether I am correct in considering it merely a masked intermittent, due to the strong sea breezes from the S. W., or "*along shore wind*" may be disputed, as this class of cases appears to have been generally placed under the head of Dyspepsia. If the patient remains ever so short a time in a S. W. breeze, even though it comes from the sea, an immediate aggravation of all the symptoms occurs.

Slight fever may or may not have come on irregularly for a short time previously, in the form of an intermittent, and ceased. General debility without emaciation commences: tongue white, and anæmic: the pulse generally remains unaltered, though easily excited on exertion: palpitations often excessive: constant eructations of wind: bowels costive, evacuations hard and dark, or else clay coloured: urine sometimes natural, generally deficient in quantity, high coloured and hot, antiperiodics increasing, and rendering it nearly the colour of pure water: there is dread of some impending evil: extreme nervousness: headache: bad rest at night time, about midnight sudden startings, and aggravation of all the symptoms, those of the chest approaching to asthma: nausea, increased (except in some rare cases) by pressure of the epigastrium: often spontaneous vomiting: functions of liver disordered, rather tender on pressure: cough: chest clear on percussion, no alteration to be detected on auscultation. In no cases, even of months standing, does emaciation appear to take place. During the excitement of conversation, anger, or slight exertion, all morbid

symptoms generally disappear: but writing, or any occupation which renders a standing or sitting posture necessary for any length of time, causes great weariness, with dull pain in the lumbar region, and a return of the chest affection.

Purges aggravate the symptoms, though it is absolutely necessary to regulate the bowels. A combination of arsenic, quinine, and bichloride of mercury, acts most beneficially. Iodide of potassium is often efficacious: if the tongue is very anæmic, sulphate of iron should be prescribed: the carbonate of iron also appears to do much good. When rest is very broken at night time, sulphuric ether, and aromatic spirits of ammonia, afford great relief.

In the commencement of June, some tincture of barberry* was sent to Cochin, for the purpose of testing its efficacy, in cases of malarious fevers. At the same time, a most interesting set of cases of this disease, contracted in the Wynaad jungles, came under treatment. I could not perceive that the medicine did much good: it may perhaps be thought, I should have continued it for a longer period, but seeing that the disease in all was gaining ground, I resorted to quinine, and in every instance with success. Having in Mysore had several opportunities of using Warburg's fever drops, it may not be out of place to state, that I feel very confident, that tincture of barberry, and that patent medicine, are not identical.

Twenty one individuals went for high wages from Cochin to the Wynaad jungles, to build a house: whilst so employed, all, except one boy, were attacked by fever: one died, the remainder returned to Cochin, where more succumbed.

Case No. 1.—*Quotidian Ague.*

Barid Matthew, M. Æt. 35, Cooly, Native Christian.

June 5th, 1860, admitted. Skin moist and cool: pulse 80: tongue clean at sides, white in centre: abdomen soft: no enlargement in splenic region, although there is pain, which is augmented on pressure. Bowels moved last night, not to-day: no sleep at night time, no appetite, some cough, without expectoration, during the cold stage of fever: does not complain of headache. Looks very weak and emaciated. States that he has had fever daily, for upwards of a month, commencing in the afternoon, with rigors, and lasting some hours.

* Prepared from a species of *Berberis* growing on the Nilghiris.—Ed.

Tincture of barberry 3 iii. to be given at once, and no fluid or food to be allowed.

5-30 P. M.—Pulse 88, small, and weak, skin cool, much thirst, pain in the loins, feels chilly.

Tincture of barberry 3 ii. to be given at once.

June 6th.—Fever set in at 6 P. M. yesterday, with rigors, and continued until 10.30 A. M. to-day, and is the most severe attack he has yet experienced. Pulse 84, tongue cleaner, skin moist.

Tincture of barberry 3 iii. at once. (10-30 A. M.)

Vespere.—6 P. M.—Fever returned at 4 P. M. and has become so severe that it appears advisable to change the treatment.

Quinine two grains, calomel four grains, compound antimonial powder two grains, to be given every second hour.

June 7th.—Fever lasted till 10 P. M. Pulse 72: skin cool.

Continue powders, omitting the calomel, every 3rd hour.

June 8th.—Slight pyrexia at 8 P. M. last evening. Pulse 76, quiet: slept well: bowels open: no headache.

Continue powder three times a day.

Vespere.—No fever: headache: pulse 56.

Two leeches to each temple.

Subsequently, he gradually progressed, and

June 14th, was discharged well.

Case No. 2.—*Quotidian Ague.*

Mutti Cheryan, M. Æt. 22, Cooly, Native Christian.

June 5th, 1860, admitted for intermittent fever. Skin moist: pulse 96: tongue a little loaded: lips parched: severe headache, from temple to temple: bowels open once this morning freely: abdomen soft: very restless, and rather exhausted: enlargement of spleen, which is painful: no appetite: no rest at night time: cough with bronchitic expectoration.

States that he has had fever daily for a month, at first 11 A.M., subsequently later, and yesterday at 4 P.M. each paroxysm being ushered in by rigors lasting one hour, the hot stage extending over several hours, and the sweating one being excessive.

Tincture of barberry 3 iii. to be given at once.

Sinapism to left side.

5-30 P. M.—Very severe rigors now present: is vomiting: and much prostrated.

Hot bottles to feet and back.

Sinapism to abdomen.

Calomel two grains, quinine four grains, compound antimonial powder two grains, every second hour, for six doses.

June 6th.—Fever lasted till 9 P. M. when free diaphoresis set in. Slept well: pulse 72, quiet: skin cool and moist: tongue clean: no pain in abdomen: no appetite.

Continue powders, omitting the calomel.

Vespere.—No fever: medicine continued.

June 7th.—No fever: feels better: complains of pain in the back: dizziness when rising: pulse 84.

Medicine to be continued: turpentine liniment to back.

Vespere.—No fever: but most severe headache: two leeches to either temple.

June 8th.—No fever: pain in back returned: headache gone: pulse 72: tongue clean: skin cool, moist: giddiness the same.

Powders three times a day.

Vespere.—Pulse 72: œdema of feet has commenced to-day. The œdema lasted until the 12th, when it was nearly gone. On the 14th he became an out-patient, and made a good recovery.

Case No. 3.—*Quotidian Ague.*

Barrid Lonen, M. Æt. 40, Cooly, Native Christian.

June 5th, 1860, 11 A. M. admitted. Skin warm, dry: pulse 100, weak: tongue dry: lips parched: headache: drowsy: bowels open yesterday, stools greenish: cough, with bronchitic expectoration: pain in upper part of chest, which is resonant on percussion: nostrils dilate at every expiration: abdomen hot, soft on pressure: restless: no appetite.

States he has had fever for a month, coming on daily, with rigors, about 8 A. M., or 10 A. M., and lasting till evening: sweating stage excessive.

Tincture of barberry 3 iii. at once. Sinapism to abdomen.

5-30 P.M.—Breathing stertorous: cannot be roused to reply to questions: is nearly insensible: pupils contracted: conjunctivæ turgid: skin hot and dry: pulse, from 140 to 160, very weak: has passed urine in bed: bowels moved twice, feculent, and watery.

Blister to occiput.

Calomel three grains: compound antimonial powder four grains, at once.

6-15 P. M.—Stertor going off: lips puff out with every expiration: cannot be roused: pulse 136: skin hot and moist.

Calomel two grains: quinine four grains: compound antimonial powder two grains: every 2nd hour, for six doses.

June 6th.—Apyrexia, and sensible: pulse 96, quiet: skin natural: blister rose well.

Continue powders without the calomel, every 3rd hour.

June 7th.—Fever returned at 7 P.M. with slight rigors, and continued till 5 A. M. to-day, has been sleeping well.

Continue medicine.

Without giving the daily reports, it will be sufficient to observe, that this patient subsequently suffered from extreme nervous prostration, pain in the chest, and vertigo, but on

June 24th was discharged cured.

Case No. 4.—*Quotidian Ague.*

Bastian Barrid, M. Æt. 30, Cooly, Native Christian.

June 13th, 1860, admitted, with fever present: tongue white: pulse above 100: heaviness, but not pain in the head: bowels costive: cough, with bronchitic expectoration: spleen enlarged, lower edge of right lobe of liver advanced, and painful on pressure: no sleep.

States that he has had fever daily, for the last fourteen days, about 12 A. M., lasting some hours. Likewise six weeks since, when in the Wynaad, with the other men whose cases have been detailed.

Tincture of barberry 3 iii. now and repeat at 3 P. M.

June 14th.—Has passed his fæces involuntarily in the bed, and is now quite insensible: skin of body generally hot, but cold in places which are exposed to the air: pulse 128, weak: respiration 48: has not taken any food.

Calomel two grains: quinine four grains: compound antimonial powder two grains: to be given at once, and repeated every 3rd hour. Brandy ℥ i., chicken broth Oi.

Vespere.—Has remained in much the same state during the day, is now sensible, and although unable to speak, protrudes his tongue when told to do so: spasmodic twitchings in his left arm: evacuations have again been passed involuntarily in the bed: pulse 88: skin warm: took some chicken broth, and brandy, as well as the powders.

Continue powders and chicken broth.

June 15*th.*—Late last evening spoke a little : took a little conjee, and at 10 P. M. fell asleep, and slept until 2 A. M. this morning, crawled outside the ward : has passed urine, has taken eleven powders.

Quinine four grains, every four hours.

June 16*th.*—Slight pyrexia yesterday at 2 P. M., lasting till 8 P. M., subsequently he did well, and on June 26th was discharged.

Variola.—During the year 19 cases have been admitted, out of which four terminated fatally.

Number of Admissions.	Result.	
	Cured.	Died.
10 Vaccinated.....	10	0
9 Unvaccinated.....	5	4
Total...	15	4

From the above it appears, that amongst those unprotected by vaccination, 44 per cent. died : but none amongst the vaccinated. A Mahomedan female was admitted into hospital, September 6th, with ovarian dropsy, and tapped on September 7th. Variola showed itself on September 25th : probably she held some intercourse with the patients in the small-pox hospital, on the other side of the road.

Vaccina.—Small-pox having been so mild this year, the population have not availed themselves much of the benefits of vaccination. Difficulties in this department have been still farther augmented, by the new police, who though *professing* to be only the old police reorganized, do not permit a peon to this department unless paid for.

Diseases of the Lungs.—*Catarrhal* cases were common during the whole year, especially at the monsoon time, when *bronchitis* was also frequent ; but this last was most severe during the land winds. *Phthisis pulmonalis*, mostly attacks the East Indian population in Cochin, showing itself in some instances, at a very early age. *Pleuritis, pneumonia*, and *hæmoptysis* are all rare affections, except as complications of other diseases.

DISEASES OF THE LIVER.—The admissions amongst in, and out-patients, for five years, ending December 31st, 1860, have been as follows :—

Months.	Hepatitis Acuta.			Hepatitis Chronica.			Icterus.			Total Admissions.
	In.	Out.	Total.	In.	Out.	Total.	In.	Out.	Total.	
January.....	0	4	4	0	0	0	0	2	2	6
February.....	1	4	5	0	2	2	0	2	2	9
March.....	1	5	6	1	2	3	0	2	2	11
April	0	1	1	1	1	2	0	3	3	6
May...	0	2	2	0	2	2	1	4	5	9
June.....	1	2	3	1	4	5	0	0	0	8
July.....	1	6	7	0	7	7	0	5	5	19
August.....	0	2	2	1	4	5	0	3	3	10
September.... ...	0	2	2	2	4	6	0	3	3	11
October.....	2	8	10	0	5	5	0	3	3	18
November.... ..	0	4	4	1	6	7	1	2	3	14
December.....	1	9	10	0	5	5	0	2	2	17
Total...	7	49	56	7	42	49	2	31	33	138

In the above table, owing to the nature of the returns, cases of *cirrhosis* cannot be divided from chronic hepatitis. Several instances of cirrhosis, due to spirit drinking, came under notice, more especially amongst Hindoo toddy drawers, of the Teer caste, and Native Christians.

Acute Hepatitis has numbered several patients : in some it was uncomplicated, in others the sequelæ, or complication of other diseases. An East Indian writer was admitted on the sick report in October, with simple acute hepatitis, apparently due to broken nights' rest, and much writing. The local abstraction of blood, and lowering remedies, speedily relieved him. An European planter came to Cochin, September 20th, 1860, suffering from the same disease, of five days' standing, it had supervened as a complication on severe malarious fever contracted in the jungles. He was unable to bear the slightest touch, or even to move his right thigh, without suffering the greatest agony : and the other symptoms were well marked. Though his pulse was weak, ℥ xviii. of blood were abstracted with great relief, but succeeding prostration became excessive : the next day it was necessary to remove the same amount, and fainting fits, though of short duration, occurred several times. Recovery

was rapid, but when all hepatic symptoms had subsided, quotidian ague reappeared.

Hepatic Abscess has not occurred in any cases of hepatitis treated during the year; but four instances, three of which proved fatal, were admitted. In the records of the Dispensary, only two similar cases appear to be briefly recorded. One was admitted as an out-patient, April 1858, with the following remark by *Dr. Leslie,* "Abscess (?) large tumour in epigastric region." The other case occurred previously, in which it was surmised an hepatic abscess had burst into the trachea; the progress or result of neither case is noted.

Case No. 5.—*Hepatic Abscess, punctured.*

William Pont, M. Æt. 22, French Sailor.

April 12*th*, 1860, was removed from a low hotel, into the Dispensary, in a very weak, emaciated state: fainting on the least exertion. At the lower edge of the liver, on the right side, and near the median line, is a fluctuating swelling: the stomach appears distended with flatus: respiration hurried: pulse 88, weak: bowels irritable: tongue preternaturally red and clean: urine natural: sleeps pretty well: no fever: excessive perspiration at night time.

His illness commenced about a month ago, as acute hepatitis, according to his description of the symptoms, and appears to have been consequent upon exposure to the sun.

April 13*th*.—The patient being apparently almost at death's door, and opening the abscess giving the only chance of recovery, I determined to operate.

Having divided the integument with a lancet, a hydrocele trocar was introduced into the tumour, when ʒ iiss. of thin pus flowed out: faintness now ensued, so nothing further could be attempted. Ammonia and bark were given internally, with wine, locally a poultice; but he never improved though he lingered on for six days. No examination of the body was made.

Case No. 6.—*Hepatic Abscess, punctured.*

Barid Piloo, M. Æt. 40, Cooly, Native Christian.

September 6*th*, 1860.—Admitted with a distinctly fluctuating swelling, the size of an infant's head, situated in the epigastric region, over which enlarged veins are perceived: is rather thin: bowels costive, being moved on alternate days: pulse 112, weak: no appetite.

States that he has only been ill fifteen days: that the first morbid symptom he perceived was a sudden pain in the abdomen; used to drink freely.

September 7th.—Opened abscess, whilst the patient was under the influence of chloroform, ℥ ivss. of pus were evacuated, at first laudable, subsequently like thick bloody serum.

Poultice.
Wine and arrowroot.
Cinchona ʒ i. three times a day.

Vespere, quiet and comfortable: some pus evacuated in the poultice.

September 8th.—Pulse 108, pretty quiet: says he has less pain, except in his back and across his loins, where it is severe: was unable to lie down during the night, so remained in a sitting posture, supported by pillows.

Continue medicine, add morphia acetatis grs. ⅛ to each dose of bark.

Chloroform liniment to the back.

September 12th.—Has continued much the same for the last four days: last night was purged about twenty times, some straining: no pain in abscess: apparently much the same: pulse 106.

Pulv. Cinchona ʒ i.
Acid. Sulph. dilut. ♏ x.
Aquæ ℥ i. to be taken three times a day.
Wine one measure in conjee.

September 13th.—Improved: bowels moved three times, no pus in the evacuations: no pain: pulse 96.

Pulv. Doveri gr. x at bed time.

September 16th.—Much thinner and weaker than he was at the time of last report, some pus present to-day in his stools: skin harsh, dry: tongue loaded and dry: pulse 96: no pain: sleeps well.

Add wine ℥ i. daily.

September 17th.—A large quantity of pus passed by the bowels: pulse 92, quiet, and stronger: feels no pain, and wishes to go home.

Increase wine to ℥ iii. daily.

September 18th.—Slept pretty well: no pain: swelling nearly imperceptible: purged 15 times last night, and most of the evacuations pure pus.

Continue.

September 19th.—Purged ten times last night, evacuations being of the same character: pulse 96, hardly perceptible at the wrists: does not complain of anything.

Cont. add Carbonate of ammonia five grains to each dose.

September 20*th.*—Much the same: purging, with the evacuation of pus continues: no pulse at the wrists: 10 P. M. expired.

Case No. 7.—*Hepatic Abscess: death.*

Poovelingum Cunapilly, M. Æt. 30, Cooly, Hindoo.

June 25*th*, 1860.—Admitted, with a fluctuating swelling, the size of a fœtal head, in the epigastric region, beginning at the apex of the sternum, but not extending far laterally: no bulging of the ribs: tongue whitish, moist: eyes yellow: pulse 130, very small and weak, scarcely perceptible at the wrists: bowels moved six times last night, four times to-day, small in quantity; some griping, no straining: lying down on back causes pain, none lying on right side, none in shoulder: is very emaciated.

States that the first symptoms he perceived were fifteen days since, when he commenced frequently to pass small bloody stools: and thirteen days ago, he observed a swelling as large as it is now, since which period he has daily become thinner.

Tinct Opii ℥ℓ v. Infus. chiretta ℥ iss. three times a day.

June 30*th.*—No change, except that he is weaker.

Add Carbonate of Ammonia grs. v. to each dose.

July 2*nd.*—Much the same.

Continue medicines.

July 3*rd.*—Was several times purged last night, and at 10 A. M. expired.

Examination of the body, four hours after death.—One pound eight ounces of yellow serous effusion was perceived within the cavity of the peritoneum. Liver large, weighing six pounds seven and a half ounces. The whole of the right lobe one large abscess, from which three pounds twelve ounces of pus were removed. The pus in the most anterior part of the abscess was thin, with a sanguineous tinge: that deepest down, thick, and yellowish: the inner surface of the abscess appeared covered by small granulations.

Case No. 8.—*Hepatic Abscess.*

Iappen Iappen, M. Æt. 30, Cooly, Hindoo.

September 7*th*, 1860.—Admitted, pulse 108, full: tongue white, creamy: bowels costive: urine passed in large quantities: a large, painful, and fluctuating swelling exists in the right hepatic region, no friction sound in it: does not have fever: is thin and emaciated.

States that five months since the present symptoms began with pain in the liver.

Pulv. cinchona ten grains, three times a day.
Arrack one measure daily.

10*th September.*—Improving, circumference of abscess increasing, but its prominence decreasing. He continued in the dispensary till the 13th, when he declined remaining any longer, as he said he felt much better.

Thus, out of four instances of hepatic abscess, three died: the result of the fourth, being doubtful. The proportion of recoveries in 81 instances in which operations were performed on Europeans, suffering from hepatic abscess is stated by Dr. Waring, (*Abscess of the Liver*, p. 178), to be 18.5 per cent. In six instances in which abscesses in the liver presented externally, and were opened, in the European General Hospital at Bombay, reported by Mr. Stovell, (*Bombay Medical and Physical Transactions* for 1851 and 1852,) five died, and one only recovered.

In the only instance of a native, on whom I have operated, previous to these cases, at Bolarum, in May 1856, a second abscess subsequently showed itself, and the case proved fatal.

DISEASES OF THE STOMACH AND BOWELS.—*Acute Dysentery.*—Half drachm doses of ipecacuanha given as advised in the Circular letter, of March 14th, 1859, have been employed with varying success in uncomplicated cases amongst natives: as a rule, small doses with Dover's powder, and blue pill, have succeeded better.

Dropsies.—Under this head there have been 197 admissions, with 12 deaths.

Many cases have come to the dispensary, suffering from long standing diseases, dropsy being merely the closing stage; some cases have been due to affections of the heart, liver, kidneys, ovaries, or bowels: or, in those more rapidly cured, to malarious fever. Depraved appetites are perceived in some instances, and earth, stones, and other articles, are swallowed by the patients.

Paracentesis was performed successfully three times, in native females suffering from ovarian dropsy: unsuccessfully in a French sailor, who came from the Mauritius, subsequently to the operation, he progressed favourably, until the third evening, when vomiting and purging set in, and he sank at 8 A. M. the next morning.

Beriberi.—This disease does not appear to be often found in Cochin or Calicut. During the past year a sepoy of the 45th Regiment N. I. who contracted it in Burmah, and re-

lapsed in Madras, was again readmitted at Trichoor. One instance, Case No. 17, occurred amongst the dispensary patients.

Venereal Affections.—*Gonorrhœa and Syphilis.*—These affections are frightfully prevalent, amongst both the married and unmarried population.

Stricture of the Urethra.—In one instance of a Jew, who came to Cochin from Poona and Bombay, the stricture was nearly impervious: a catheter had been unsuccessfully employed before I saw him, and he declined to submit to chloroform. Two drachms of warm water, one of laudanum, and one of tincture of henbane, injected down the catheter whilst it was pressing against the stricture, occasioned relaxation, and the instrument was passed without difficulty. In 1853, whilst on board ship, a case of retention of urine came under my care, when a catheter could not be introduced: injecting laudanum and warm water caused relaxation of the stricture.

Abscesses and Ulcers.—Fistula in ano, as well as in perinæo, are frequently due to fishbones having been swallowed. In 1859, an European came under my care for diarrhœa, in whom it was evidently due to some local irritation at the rectum: but as he did not suffer from piles, some foreign body was suspected. A careful scrutiny of his evacuations having been kept up, a small fish bone was detected, subsequent to which the symptoms subsided.

Case No. 9.—*Perinæal Abscess from swallowing a bone.*

Alexander Stuart, M. Æt. 67, English Sailor.

September 25th, 1860.—Admitted as an out-patient, complaining of great pain at the anus, and the sensation as if a lump were there: has external piles: bowels costive: is otherwise well.

Oleum Ricini ℥ i. at once.

Vespere.—Pain much augmented: cannot sit down, stand, or make himself easy in any position: uneasy sensation at anus increased: on a digital examination, a piece of bone was felt, and with very little difficulty extracted: it proved to be a portion of bone from a chicken, $1\frac{1}{2}$ by $\frac{1}{8}$ of an inch.

September 29th.—Has been better: but last night could not pass urine. The Dresser found him suffering from intense pain at the anus.

12 leeches applied.

Vespere.—No better: no urine passed.

Warm bath.

September 30*th*.—The same: a little dribbing of urine, but the bladder is distended.

Introduce catheter.

This was effected with great difficulty, it appeared as if there were a stricture, about the membraneous portion of the urethra: the removal of the urine has not relieved the pain.

Repeat warm bath: and 12 leeches.

October 1*st*.—Much the same: cannot pass the urine.

Introdue catheter.

October 2*nd*.—Suddenly made water this morning, an abscess burst inside the rectum, and relieved the symptoms: evidently this must have been caused by the chicken bone.

October 4*th*.—Abscess unhealthy and enlarging, discharge profuse. He was now removed to the dispensary: the abscess healed after some time, and he was discharged well.

A third instance, in an European, came under my care: but the cause was more obscure; convalescing from dysentery, he relapsed: he had great pain at the rectum, which was unrelieved by warm baths, sedative injections, fomentations, and other remedies: suddenly an abscess burst, discharging about ℥iv. of most offensive pus; perhaps he had surreptitiously eaten fish, and bolted a bone.

The foregoing three instances show how fish, or other small bones, may be swallowed, but detained at the rectum, setting up irritation: which may cause diarrhœa, and so discharge the irritating cause, terminating in a cure. Or an abscess may be occasioned, and the foreign bodies come away. Or finally, it may be assumed, that if undischarged, a fistula may be caused.

Ulcers.—In my last yearly report, I alluded to the leproid character of many of the more inveterate cases of ulcer, which are characterized by a permanent white cicatrix, and are often so numb, that the application of nitric acid is unfelt. Albuminuria frequently exists. During the year 1860, several instances have presented themselves, in which symptoms of leprosy, and elephantoid fever, have been well marked.

Case No. 10.—*Ulcer*.

Iappen, M. Æt. 30, Hindoo, Beggar.

October 18*th*, 1860.—Admitted, with a large open ulcer, extending round the whole surface of the right leg, from the calf to the right ankle: enclosed between ulcerated spaces, there are healed spots of skin, of a perfectly white colour. The diseased part is very deficient in sensation, but there is

no numbness, of either foot, or other part of the body: a bubo exists in the groin.

States that the ulcer is of eleven months standing: that he has been some time in the Rajah's Hospital, at Quilon, of which place he is a native: distinct elephantoid fever, comes on once or twice a month, consisting of three paroxysms, and bubo in the groin.

WOUNDS AND INJURIES.—The following is a list of the principal operations performed during the year, with the results. Six amputations performed by myself in the Rajah's Hospital, three miles from Cochin, are added, in accordance with the desire of the Deputy Inspector General of Hospitals, of the Malabar and Canara Division: all the remainder were operated on in Cochin.

No.	Operation.	Remarks—Disease.	Result.
1	Amputation Right thigh..	Ulcerated elephantiasis.....	Died.
1	„ Right leg.....	do. do.	Cured.
1	„ Left forearm	Compound comminuted fracture.....	do.
1	„ Right leg.....	Distortion and extensive ulceration....	do.
1	„ Left leg.....	do. do. do.	do.
1	„ Left leg.....	Extensive ulceration.....	do.
1	„ Right forearm	Traumatic gangrene due to compound fracture.....	do.
1	„ Right arm....	Compound fracture.....	Died.
1	„ Left leg.....	Ulceration and diseased bone.....	Cured.
1	„ Left forearm	Compound comminuted fracture.....	do.
1	„ Right index finger...	Gangrene.....	do.
1	„ Middle finger left hand...	Diseased joint.....	do.
1	Craniotomy.....	.....	do.
1	Do.	.....	Died.
2	Taxis.....	Strangulated hernia,...	Cured.
2	Puncture Hepatic Abscess	1 European, 1 Native..	Died.
3	Paracentesis Abdom.....	All ovarian in Native females.....	Cured.
1	Do. do.	Ascites in an European Sailor.....	Died.
3	Tapped and Injected.....	Hydroceles.....	Cured.
6	Circumcision.....	All in venereal cases.....	do.
1	Depressing Cataract.....	Hard variety.....	Failed.
1	Drilling Cataract.....	Soft do.	Cured.
2	Divided Prepuce.....	Paraphymosis.....	do.
3	Polypi, removed.....	1 both nostrils, 2 single nostril.....	do.
1	Seton through Ranula	.....	do.
4	Cancers removed.	2 lower lips, 1 upper lip, 1 prepuce....	do.
12	Tumours removed.....	One from each of the following places: globe of eye: eye-lid: upper jaw: lower jaw: upper part of nose: shoulder: lip: finger: buttock: leg: penis: and foot.....	do.

No.	Operation.	Remarks—Disease.	Result
1	Hæmorrhoids tied.....	Large external ones.....	Cured.
6	Removal of.....	Foreign bodies, 1, four bits of iron from the eye: 4 from nose: 1 piece of bottle 2 × 1½ inches from pharynx.....	do.
1	Fracture of both bones of forearm: Tetanus		Died.
1	Fracture two ribs from sword cut, chest entered.....		do.
4	2 of left: 1 of right thigh: 1 of left thigh and humerus.....		Cured.
3	1 left tibia: 2 both, left tibiæ and fibulæ.....		do.
2	1 left: 1 right clavicle.....		do.
3	1 Acromion process of left scapula: 1 left arm: 1 left humerus...		do.
4	1 skull: 1 right middle finger: 1 right ring finger: 1 metatarsal bone of left hand.....		do.
1	Dislocation of right shoulder, reduced.....		do.
1	Wound of abdomen, with protrusion of the intestines.....		Died.
1	,, ,, ,, ,, omentum.....		Cured.
2	Sword cut, one dividing the whole of the flexor muscles of the right forearm, and radial artery, which required securing: the second, also a sword cut, divided the scalp, and several arteries.....		do.

608 individuals have been admitted for accidents and injuries during the year: out of which number, 42 were in-patients; most of the cases were slight, and owing to chisel wounds, blows with hammers, and such like, amongst workmen employed in the Merchants' yards: a few have been of a serious character.

Case, No. 11.—*Fracture of Skull.*

Mathew Ellia, F. Æt. 3, Hindoo.

March 23rd, 1860, 8 P. M. admitted into hospital. A jagged wound exists in the right parietal region, and the scalp is detached over a space about three inches square, a portion of the skull is elevated. Hæmorrhage rather free.

Two hours previous to admission, she was sitting under a cocoanut tree: a toddy drawer was above, when his small hatchet fell out of his belt, and descended on the child's head; after striking the skull it must have glanced.

Wound brought together, and cold water applied.

March 24th.—Two small pieces of bone, altogether ½ by ¼ of an inch being loose, were removed: some vomiting to-day. This case did very well. On April 18th a small bit of the skull was still exposed: she then became an out-patient, and soon recovered.

Case No. 12.—*Extensive Scalp Wound.*

Iappen Narrainah, M. Æt. 25, Hindoo, Toddy drawer.

September 15th, 1860, admitted with the skull of the right side of the head denuded of scalp, and periosteum, from the summit to the ear, and from the eye to nearly the occiput: extent of bone denuded, being 5 by $5\frac{1}{5}$ inches: the whole of the sagittal, and right coronal sutures are exposed: most of the detached scalp is deficient in vitality.

Four days ago he fell out of a cocoanut tree, and alighted on his head.

In this case, though all the detached scalp sloughed away, not a single bad symptom occurred: first, the surrounding skin contracted, and nearly one quarter of the denuded bone was thus covered; in about one month, small granulations showed themselves at the sutures: next the whole surface of the bone looked red, and granulations here and there pierced the outer table. By November 1st all the outer table had came away, leaving a healthy surface below it. By December 31st the whole of the wound had cicatrized.

One case of extensive injury which occurred to a toddy drawer in 1859, and was admitted in the Rajah's Hospital, appears worth recording. It is not surprising that the patient died, though it is that he lived so long.

Case No. 13.—*Side of face impaled.*

Iappen, M. Æt. 30, Hindoo, Toddy drawer.

May 3rd, 1859, 12 A. M. admitted. A piece of stick, 2 inches in circumference, is protruding $1\frac{1}{4}$ inches, through the scalp, close to the summit of the right side of the head: a small wound exists at the right margin of the thyroid body. The inferior extremity of the piece of stick can be felt inside the lower wound, close to the carotid artery. This piece of stick is so firmly fixed, that it cannot be moved in the slightest degree. There is an emphysematous crackling over the whole of the neck. Pulse rapid and weak: respiration occasionally stertorous: unable to open the mouth: greatly prostrated, but sensible.

It is stated that 48 hours before admission, he fell out of a cocoanut tree into a hedge, in a sitting posture.

Operation.—An incision was carried from the summit of the head downwards, above the course of the piece of stick, as far as the cheek bone: the temporal muscle was found pierced close to the bone, and the stick was still so firmly lodged, it could not be moved. It became a question whether to divide the malar bone or draw out the foreign

body by force. This last course was decided upon, and a piece of stout whipcord, having been firmly secured round the piece of wood, it was extracted through the upper wound; no hæmorrhage worth speaking of occurred. The track taken by the stick was, proceeding from below upward, behind the sterno-mastoid muscle, then to the outer side of the right pterygoid process of the sphenoid bone, next through the origin of the temporal muscle, and passing upward through the temporal fossa, it reached the summit of the head, and then pierced the scalp.

The size of the piece of stick was as follows: 7 inches long: circumference at summit 2, and at base, $2\frac{1}{2}$ inches.

Subsequent treatment was merely palliative: prostration increased: suffocation threatened: and 10 days after the operation, he died from exhaustion.

A post mortem examination demonstrated that the periosteum had become detached by suppuration, from the right pterygoid process of the sphenoid, and also from the left temporal fossa.

Amongst *fractures*, some very interesting cases occurred. An engagement took place June 25th at Palliport, 20 miles from Cochin, between the ryots and some police when twenty-one individuals were wounded. In one instance, the right hand was swept off at the wrist, no hæmorrhage occurred, but it was necessary to make a good stump. Another individual had the 3rd and 4th ribs of the right side divided by a sword cut: and considerable hæmorrhage occurred, from the intercostal arteries; after a few days, suppuration commenced inside the chest, and he died from exhaustion, just three weeks subsequent to the receipt of the injury.

Several other interesting cases of fracture occurred: in one, a sailor was knocked out of the royal yard of a ship by lightning, by which his thigh was broken, and his arm and body extensively burnt by the electric fluid. He recovered without a bad symptom. In two cases of fracture of the clavicle, I have employed *Dr. Lovell's* elegant apparatus, which lacing behind, and being secured by a band round the waist, saves the trouble of having constantly to re-adjust bandages.

Amputations call but for few remarks. On September 4th I removed a leg, on the 14th the ligatures came away, and the flaps united by first intention. September 21st a small ulcerated spot showed itself, from which gushed out

two ounces of arterial blood. The patient was kept quiet, cold applied, and he did well.

Elephantiasis Arabum.—In the "*Madras Quarterly Journals*" for July and October, last year, I have given my reasons for considering this disease to be a constitutional affection, in which attacks of a peculiar fever (which I have denominated Elephantoid) are almost invariable.

Elephantoid fever consists of from one to three paroxisms: having cold, hot, and sweating stages: conjoined with the appearance of an enlarged gland or glands, between the affected part of the body and the trunk. The fever is followed after a short interval, by a fluid, albuminous effusion, in the subcutaneous areolar tissue of the affected spot: when the fever has subsided, the effusion is by degrees more or less absorbed; but in old standing cases, it usually becomes organised, within the meshes of the areolar tissue. The inner surface of the skin is next implicated, and appears as if it and the condensed areolar tissue were one densely thickened structure: and which has given rise to the erroneous belief, that this disease is merely condensation of the skin.

Case No. 14.—*Elephantiasis Arabum: Sequelæ of Amputation.*

This case was mentioned in the "*Madras Quarterly Journal,*" as the sixth amputation, which was performed February 29th, 1859, for ulcerated elephantiasis of the left thigh: the right forearm being also affected.

Since the operation, the patient has regularly presented himself once a month for inspection.

Elephantoid fever reappeared on March 11th 1860, with slight enlargement of right forearm, but his general health had much improved.

On August 26th, nearly 13 months subsequent to the operation, fever returned: and for the first time, with a bubo in the left groin, and elephantoid effusion into the stump. At the same time, enlarged glands showed themselves in the axillæ.

On December 31st the effusion in the stump was entirely gone, and no fever had occurred since August.

The above case is very interesting, as the symptoms of irritative fever were so severe in July 1859, that he would probably soon have succumbed, had no operation been preformed: since the removal of the irritating limb he has

regained his strength, and lived quite free from inconvenience, although the disease still remains in the system.

Case No. 15.—*Sloughing Elephantiasis—Spontaneous cure.*

Mingo Bastian, M. Æt. 45, Cooly, Native Christian.

March 4th, 1860, admitted. This case has been already detailed in my paper referred to (No. 100). The integument of the right leg was detached by sloughing, from the muscles of the calf, so that the hand could be passed round the limb, between the muscles and the integument.

Under treatment, recovery ensued, and elephantoid fever, which was stated previously to have come on monthly, had not reappeared up to June 25th, when he was last seen.

Case No. 16.—*Sloughing Elephantiasis—Spontaneous cure.*

Moorgin Carmache, F. Æt. 36, Cooly, Native Christian.

August 29th, 1860, admitted, with a large fluctuating abscess extending from the lower extremity of the left femur, half way down the leg, and apparently involving the subcutaneous areolar tissue, in the whole of its circumference.

A few days since elephantoid fever set in, and recurred for several days, cannot say how many : great pain set in on the site of the present abscess, and has augmented ever since.

The left lower extremity has been affected with elephantiasis for the last three years.

Abscess opened, ℥ ix. of thin pus evacuated : poultice applied : pulv. cinchona ʒ i. three times a day.

August 30th.—Pain decreased : discharge most profuse.

Arrack, one dram daily.

Gradully improved : discharge became less : and on September 18th she became an out-patient.

Case No. 17.—*Amputation for Elephantiasis, through the diseased mass ; deleterious effect from inhalation of Chloroform : Beriberi : subsequent return of Elephantiasis.*

Kishnum Coondie, M. Æt. 40, Beggar, Hindoo.

May 14th, 1860, admitted, with elephantiasis of 15 years standing : the whole of the upper surface of the right foot and toes is covered with tubercles, from the size of a pea, to that of a pigeon's egg : effusion also extends as high as the knee : great pain : maggots present between the toes.

Formerly elephantoid fever occurred daily, for three successive paroxysms : but latterly, for only two : it generally recurs at least every month. The man's life is now quite a misery to him, from excessive pain.

Disease commenced after falling from a cocoanut tree, and injuring his right ankle.

May 19*th.*—Having been placed under the influence of chloroform, the limb was removed below the knee: very little blood was lost: the posterior tibial artery was at once secured: just as the anterior tibial was caught by the tenaculum, respiration suddenly and entirely ceased: but the heart continued to pulsate: six drachms of chloroform had been employed, 30 minims being given at a time.

The mouth was at once forced open, and the tongue drawn out with a pair of forceps: cold water was dashed in the face: but at first without any good result; a silver male catheter was almost immediately passed through the nose, down the trachea, and artificial respiration commenced: first a short sigh occurred, then a longer one, and breathing was re-established.

From the stump a considerable amount of elephantoid effusion drained out. The appearances of the amputated structure were identical with those already several times described. Where the disease was of most recent origin, there was merely effusion of fluid into the subcutaneous areolar tissue: where the disease had existed a little longer period, instead of fluid there was gelatinous or organised effusion: but in the foot, the skin, and areolar tissue (which had become condensed) was merely one thickened mass.

May 20*th.*—Passed a pretty good night, but early this morning suddenly fainted, about ℥ vi. of blood came away from the stump.

The history of this case, for the succeeding two months, it will be unnecessary to relate: his recovery was very slow: no fever occurred.

July 28*th.*—Crawls about, but has not as yet attempted to use his crutches: the whole of the left lower extremity has suddenly become quite numb, and œdematous, pitting on pressure: considerable palpitations whenever he moves about: has had slight fever for the last two evenings, but *without* any enlarged glands: bowels costive.

Pulv. Jalapæ Comp. ℥ i. at once.

July 29*th.*—Numbness has extended to both hands, so that he is unable to hold any thing: tongue creamy: pulse 92: bowels open once to-day: spasms in the stump, but not in the lower extremity: pain across the loins: urine light colored, does not coagulate on boiling, S. g. 1·013 at 85° equal (according to Golding bird's table) to 1015.40.

Ferri Sulph. gr. i., Bark grs. x. three times a day.

Turpentine friction to extremities.

August 1*st*.—Œdema of leg decreased: numbness the same, as is also the loss of power over the extensors of the forearm and hand.

Continue.

August 5*th*.—The same: but since yesterday, the extensor muscles of the left foot appear to have lost their power, and he cannot place his foot properly on the ground.

Add black oil two drops to each dose.

August 15*th*.—No change for the better.

Add black oil 4 drops for each dose.

August 16*th*.—Jumpings and startings about the muscles of either shoulder: palpitations, numbness, and loss of power over arms and foot, the same.

Increase black oil to 6 drops for a dose.

August 18*th*.—Pain in loins rather augmented: otherwise no change: urine (corrected) 1009·10 neutral, clouds on being heated, clears on addition of nitric acid, clouds on addition of bichloride of mercury.

Sinapism to loins.

Continue medicine.

August 22*nd*.—A little improvement: urina chyli (corrected) 1017·34: urina sanguinis (corrected) 1010·10.

Medicine to be continued.

From this time improvement became rapid, and on September 10th he had almost recovered the use of his extremities, whilst the numbness was nearly gone; still, if the black oil were omitted, an aggravation of the symptoms took place.

December 15*th*.—No return of elephantoid fever until to-day, but now it is present, with bubo in the left groin, and effusion in the foot.

January 1*st*, 1861.—The effusion alluded to is evidently elephantoid, but the fever, it will be seen, was absent 7 entire months.

Case No. 18.—*Elephantiasis, apparently induced by external violence; ceasing, but re-excited* 15 *months subsequently, by a fresh injury.*

F. C., M. Æt. 35, East Indian.

September 1*st*, 1859.—Elephantiasis of right lower extremity: enlarged glands in right ham: no fever present.

One month and a half since fell from a pony, and alighted on his right knee: elephantoid fever commenced soon after.

Ungt. Hydr. Biniodid. to the part.

Was treated for 19 days, limb regained its natural size.

December 26*th*, 1860.—Return of elephantoid fever, with effusion in right lower extremity.

Was running after another man, and sprained his right ankle a few days since.

This case ended in suppuration round the ankle joint: one pint of pus was evacuated by a lancet.

Case No. 19.—*Metastasis of Elephantiasis.*

Charkoo Maria, Æt. 18, Sweeper, Native Christian.

June 11*th*, 1860, admitted hospital: had elephantoid fever, with bubo in right groin, followed by effusion in right leg, where there is much pain.

The case is a very decided one of metastasis, the patient having been in my employ from September 1859, to January 1860, during which period the left lower extremity only was affected. On December 7th, 1859, severe elephantoid fever occurred, and returned for three attacks, with bubo in the left groin, and effusion in left lower extremity.

In April 1860, having gone to Alwaye for bathing, the effusion in the left lower extremity disappeared. June 1st elephantoid fever recurred, but this time the bubo showed itself in the right groin, and the effusion in the right lower extremity. Pulv. jalap co. 3 i., four leeches to painful part.

June 12th.—Pain the same.

Purge: and leeches to be repeated.

June 13th.—Bowels freely open: pain continues, repeat leeches.

June 14th.—Pain nearly gone.

June 21st.—Discharged.

October 17th.—Readmitted, having suffered from elephantoid fever, for the three previous days: not a trace of the effusion is perceptible in the right lower extremity, but it has returned to the left, as it was in 1859. A remarkable case of metastasis will be found in the "*Madras Quarterly Journal*," vol. I. for 1860, page 299, at the termination of my article on Leprosy; showing how rapidly metastasis occurs.

Elephantiasis does not appear invariably to end in effu-

sion into the areolar tissue: a large number of cases, of what may be termed *masked* or *spurious elephantiasis*, are constantly coming under treatment amongst the patients of the Cochin Dispensary; one symptom, and one alone, is invariable, viz., fever or headache, with enlarged glands, occurring about the same time in the affected limb.

Case No. 20.—*Spurious Elephantiasis.*

Anna DeSilva, F. Æt. 35, East Indian, Beggar.

September 26th, 1860, admitted as an out-patient, with intense itching in the whole extent of the right leg, which is very dark colored and covered by scabs.

Has elephantoid fever once or twice a month, lasting two days, itching then begins in the leg: scratching produces a vesicle, and in the course of a day or two, a running sore occurs: after a few days, convalescence takes place. The same symptoms recur at each attack, as I have personally verified, by watching the case.

Many other instances of spurious elephantiasis might be adduced, did space permit: one class of these cases it is necessary to allude to, namely, *erysipelatous elephantiasis*: three natives during the year came under treatment, in whom erysipelas and elephantiasis co-existed. Many in which, one of these diseases occurred, without the other.

It is commonly believed that should erysipelas recur several times in the same person, elephantiasis will supervene: but I have not yet been able to satisfy myself on this point. One patient with erysipelas of the head was treated from September 12th, 1860, and recovered: he was re-attacked on October 12th, but since then has been well. Several other instances, in which single attacks of erysipelas occurred, have not as yet ended in elephantiasis; whilst no doubt, should there be a constitutional predisposition to elephantiasis, any local source of irritation, as a blow, strain, bite, or perhaps even erysipelatous inflammation, may excite elephantiasis.

Lepra Græcorum appears closely related to Lepra Arabum, elephantoid fever existing in both.

Tetanus.—Under the head of this distressing malady, two deaths have occurred. A third case was removed by his friends, and subsequently died.

Case No. 21.—*Traumatic Tetanus—Death.*

Kundun Iyapun, M. Æt. 15, Hindoo.

April 10th, 1860, admitted during my absence on duty

at Quilon, with a compound comminuted fracture of both bones of the forearm : a tight bandage was around it, and the wound was full of maggots. Had I been there, I should at once have removed the limb.

Five days previously, another boy with a hatchet, chopped at his arm. This occurred 40 miles from Cochin.

April 13*th*.—Trismus set in. Indian hemp was at once resorted to : but he sank on the 16th, worn out by the intensity of the spasms.

Case No. 22.—*Traumatic Tetanus—Death.*

Lallamiah, M. Æt. 25, Cooly, Mahomedan.

July 29*th*, 1860, 11·30 A. M. admitted, unable to open his mouth above an inch, and complains of pain, with a sensation of pulling along the back of the neck, and down the spinal column, coming on about every half hour, after speaking an immediate aggravation in the symptoms of trismus shows itself. Respiration unaffected whilst unexcited : pulse rarely above 70: tongue creamy, red at edges : skin cool and moist : urine scanty : bowels well opened last evening, by a tobacco enema : has not slept for 36 hours.

Present symptoms commenced about three days since : rheumatic pains have been severe for some months, and eight days since became much augmented, with daily paroxysms of fever, until yesterday, when it did not occur.

He says that 16 days since he was bitten in the right leg by a dog : searching which limb minutely, a second small wound was found under the ball of the right great toe, which had been inflicted three or four days since by a rusty nail.

Tincture of Indian hemp ♏ x., chloroform ♏ ii., quinine gr. i., aloes gr. v. every second hour.

Vespere.—Spasms unchecked : delirious at intervals : very thirsty, and drinks water, when spasms, though never absent, decrease for a time : the spine is also occasionally affected : the abdominal muscles are as hard as a board : is constantly hawking up, and spitting out viscid saliva : pulse 76, weak.

Inhaled 15 drops of chloroform without much benefit.

Medicine to be continued.

Congee and portwine ℥ i.

July 30*th*.—At 10 P. M. last night, and twice subsequently, he inhaled chloroform 3 ss. with great relief. Took five doses of the medicine during the night. Trismus continuous, but

exacerbations at a little longer intervals, when present opisthotonos is severe. The spasms commence in the right leg and extend upwards: no sleep.

Tincture of Indian hemp ♏ xv., quinine gr. i. every hour.

Wine ℥ iss. 3 times a day.

10 A. M.—After inhaling chloroform sank off to sleep for half an hour: otherwise the same.

Vespere.—Slept two hours after inhaling chloroform; medicine has been regularly continued unless he was asleep, or drowsy.

July 31*st.*—Slept last night from 6 to 10 P. M. when he woke with a spasm, but he has only had four during the last thirteen hours, and those of less severity. Trismus remains: urine passed freely: bowels costive: pulse 60: respiration 28: took 4 doses of medicine during the night.

Medicine every 1½ hours.

Wine and congee as before.

12 A. M.—Easier, sitting up, can open his mouth 1½ inches: pulse 72: pain on bending right knee.

Aloes gr. v. immediately.

Vespere.—Appears worse since 5 P. M., exacerbations come on every hour, and last 10 minutes: bowels not moved: pulse 80.

Medicine every ¾ of an hour.

Calomel gr. v., aloes gr. v. at once.

August 1*st.*—Took 14 doses since last report: inhaled chloroform three times, spasms returned every five or ten minutes, lasting a very short time, excepting for two hours, whilst he slept: bowels costive: urine passed three times freely: perspiration profuse.

11 A. M.—Symptoms unchecked: pulse 120: inhaled chloroform ♏ x., and pulse reduced to 90: ♏ xv. more being given, it came down to 72, and he fell asleep.

Medicines to be continued.

Turpentine enema at once.

Vespere.—Quieter, pulse 80: respiration 14: went to sleep after inhaling chloroform: during sleep considerable startings of the muscles: and pulsations of abdominal aorta very distinct.

August 2*nd.*—Slept till 7 P. M., took a dose of medicine at 8 P. M., some congee and portwine: medicine repeated at 9 and 10 P. M., when, being in much pain, chloroform was inhaled: bowels freely moved by a turpentine enema.

Vespere.—Severity of symptoms have become much aggravated: he was constantly wishing to inhale chloroform: dose of Indian hemp augmented to 20 drops.

August 3rd, 6-55 A. M.—Insensible: pulse 96: pupils contracted: bowels opened once: ammonia under the nostrils revived him: inhaled chloroform three times last night, which temporarily relieved the pain, but did not procure sleep.

Blister to nape of neck.

Vespere.—Took some broth during the day: pulse 96: bowels open once, freely: skin cool and moist: pain much decreased.

Continue.

August 4th, 2 A. M.—Suddenly became comatose: and at 4-30 A. M. expired.

No examination of the body could be obtained.

Case No. 23.—*Idiopathic Tetanus—Death.*

Iusa Kitan, M. Æt. 35, Sailor, Native Christian.

August 6th, 1860, admitted, and subsequently treated during my absence on duty. Disease of eight days standing, and thought to be due to exposure: scarifications had been made along either side of the spine by a barber: there was trismus, with occasional spasms: was given a turpentine enema.

Morphia Acet. gr. ¼
Ant. Pot. Tart. gr. ii. at once.
Chloroform ʒ ss. inhaled.

Vespere.—In the middle of the day, he was given five grs. of calomel and five of aloes every hour, by which the bowels were opened: but the spasms augmented, and deglutition became difficult.

Tincture of Indian hemp 15 drops, quinine grs. i., camphor gr. i. were given every hour.

August 7th.—No sleep: spasms more severe and frequent: pulse 88, medicine continued. In the evening the œsophagus was apparently affected: pulse small and weak.

August 8th.—No rest: symptoms augmented in severity, and relatives removed him. He died on the 12th.

A case of tetanus was treated in the bazaar, and though the man did not die, he became paralysed, and I am told still remains so.

Cancer of the hæmatoid variety is common in Cochin, and scirrhus is also frequent. Since the erection of the

dispensary, the following number of individuals have been admitted as in and out-patients, with malignant growths.

Age.	0·20		20·30		30 40		40·50		50·60		60·70		Totals.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Caste.														
Native Christian	1	0	2	2	2	1	2	3	2	1	4	0	13	7
Hindoo	2	0	0	0	5	0	3	0	1	0	5	1	16	1
Mahomedan	0	0	0	0	1	1	0	0	0	0	0	1	1	2
													30	10
Merchant	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Carpenter	0	0	0	0	0	0	0	1	0	0	1	0	1	1
Cooly	2	0	1	0	5	1	3	1	2	1	5	0	18	3
Ryot	0	0	0	0	1	0	0	0	1	0	1	1	3	1
Goldsmith	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Tanner	0	0	0	1	0	0	0	0	0	0	1	0	1	0
Toddy Drawer	0	0	0	0	1	0	1	0	0	0	0	0	2	0
Shop Keeper	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Servant	1	0	0	1	1	0	0	1	0	0	0	0	2	2
Prostitute	0	0	1	0	0	1	0	0	0	0	0	0	0	1
Boatman	0	0	0	0	0	0	0	0	0	0	0	0	1	0
													30	10
Cheek	0	0	0	0	1	1	0	2	0	0	0	1	1	4
Tongue	1	0	0	0	0	1	0	0	1	0	1	0	3	1
Penis	1	0	0	0	1	0	0	0	0	0	2	0	4	0
Leg	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Lip	0	0	0	0	1	0	1	0	0	0	0	0	2	0
													10	6

Tumours.—25 patients have been admitted under this head, during the year: some cases have been interesting, some curious.

Case No. 24.—*Tumour obstructing vision cured by operation.*

Nannoo, M. Æt. 15, Hindoo.

August 5th, 1860.—Has a tumour about the size of a turkey's egg, situated under the right lower eyelid, pressing upon which, vision is entirely obstructed, and has been for two years. Right nostril quite dry. External surface of tumour purplish, and covered with large tortuous vessels. It is soft on pressure.

History.—Five years since, a small pimple appeared on the lower eyelid and increased gradually. Five months since, augmentation in size became more rapid, and great pain commenced, precluding rest at night time.

Operation.—Having been placed under chloroform, a bistoury was entered into its lower part, on the outer side: a director having been introduced, and passed across its whole internal length, the cavity was slit up. Hæmorrhage was profuse, and several vessels required tying. The interior of the cavity appeared to consist of clots of blood, with a slight admixture of pus. The cavity was plugged with lint, to promote free suppuration.

During my absence on duty I could not continue to record the case.

August 15th.—Suppuration has been profuse, and quite absorbed the tumour: obstruction to sight having been thus removed, vision has returned. He then went away to his native village, and has, I understand, quite recovered.

The following case is a curious example of fatty tumour.

Case No. 25.—*Pendulous fatty tumour in buttock, removed by operation: cured.*

Mahdaree Chungurrum, M. Æt. 35, Cooly, Hindoo.

October 25th, 1860, admitted, with a pendulous tumour in right gluteal region, of the following dimensions: 6 inches long, 10 in. circumference at attached neck, 15 circumference at depending extremity: no pain in it: a scar exists on its surface, a dog having fixed hold of this part some months since.

Tumor is stated to have existed from his birth, but has increased more rapidly during the last 12 years.

Having been placed under chloroform, it was dissected out, and found to weigh $1\frac{3}{4}$ pounds. One artery required a ligature.

Salivary fistulæ are by no means infrequent: several cases of dilatation of the Stenonian duct have been cured by puncture with a fine trocar, and the external application of iodine. Some cases have come under treatment, in which the dilated duct had been opened by a lancet, escharotics, or allowed to burst: the appearance being that of a jagged discharging orifice in all cases, rapid cures have been effected by drying the part and applying a piece of lint soaked in collodion: this is not removed for 24 or 48 hours: and two or three applications have, in all but one instance, been sufficient to effect a cure.

Space will not allow me to remark on many other most interesting cases which have come under treatment. One instance of calculus of large size, lodged in the urethra, required operation : which, with some of the others, I must leave to a future report.

Before closing this yearly return, I have a remark to offer on the observation of M. Beau, of Paris, reported in the "*Lancet*" for September 1860 : namely, that signs of past disease may be looked for on the finger nails. Severe attacks of illness, it is stated, leave distinct transverse furrows on the patient's nails, coincident with the moment when the check in their nutrition occurred : the depth of the depression, being in proportion to the severity of the attack : the breadth to its duration. Should relapses occur, each one leaves its mark. Testing the accuracy of this remark, I have found it to be correct in several instances ; it might be a valuable aid in military practice towards deciding, whether a patient is malingering or not.

COCHIN, *January 1st*, 1861.

ART. XI.—*Remarks on the uses of some of the varieties of Berberis.* By L. W. STEWART, Esq., Medical Officer, Neilgherries.

A SUBSTITUTE for quinine has for some time attracted the attention of the Medical world, principally on account of the high price of this drug, and the great scarcity of it that is likely to take place, in consequence of the Cinchona trees failing in South America. It is an article in the Materia Medica universally used in intermittent or malarious fevers, and by many medical men it is considered a panacea in all diseases. Be this as it may, it is a medicine that cannot be compared with any other as an antiperiodic, tonic and stimulant ; and the loss of such a drug will be severely felt. As a substitute, however, for quinine, I venture as others have done, to suggest the use of two preparations of Barberry, viz., the tincture and the alkaloid "Berberine."

The first of these is a most valuable tonic and astringent if given in small doses. It is differently prepared to all other medicinal tinctures ; containing as it does four times as much soluble matter, in the shape of tannin and berberine, as other tinctures. According to Professor Simpson, in his

Notes on the "Indian Lycium," or Lykion, which is identical with the berberis lycium velaristatu, the medicine is of great antiquity. He states (p. 697 of vol. VI. of the "Indian Annals") that Galen mentions the Indian variety as the most powerful; and Dioscorides recommends the "Lykion," or Berberis in various complaints; amongst which he enumerates cœliac and dysenteric affections; and also as a counter agent to deadly poisons. This latter effect justifies us in believing that it was administered in malarious fevers of a deadly nature.

Recently Dr. O'Shaughnessy of Bengal has used it with great success in fever. He says, "it is best administered as a febrifuge, promoting digestion and acting as a gentle but certain aperient." "In ague and remittent fevers, it is peculiarly useful, and by some it is reckoned only second to quinine." It appears that berberine is given in Bavaria as a substitute for quinine, (Thomson's Cyclopædia of Chemistry;) and for the last few years, preparations of the barberry have been employed by a few Medical officers in this country in the form of tincture or extract.

This latter preparation is much less efficacious than the former, as it contains a large amount of insoluble gummy matter, quite inert.

Dr. O'Shaughnessy succeeded in obtaining the alkaloid, but whether in a crystalline form or not, I am unable to say. The process, as far as I can judge, is inexpensive and not very tedious. The time, however, at my command, considering the almost constant professional duty on the Hills, has only enabled me to prepare a small quantity of the alkaloid (crystalline) as a specimen. The crystals are bright yellow, of a silky lustre, and may be termed the "Hydrochlorate of Berberine." It is sparingly soluble in cold alcohol, but is completely dissolved by boiling alcohol or water.

From my own experience of the effects of the tincture, having used it for upwards of four years, I can confidently affirm it is only second to quinine in the treatment of intermittent fevers. I have in many cases preferred the barberry to quinine, as it promotes quickly a perspiration, and in some a diaphoresis, not unlike the effects produced after taking "Warburg's drops." Previous to my arrival on the Neilgherries, my experience was limited to native soldiers and others, but for the last year I have given this medicine to Europeans of all denominations with most successful results. Even should the medicine prove with natives as efficacious

as quinine, I consider that a great thing has been achieved. The same rules regarding the administration of quinine, should be observed in giving berberine or the tincture. When the tincture is used, the state of the patient's tongue should be observed. If it should be coated, an emetic may be given with advantage, after which the medicine may be commenced with in ʒ iii. or ʒ iv. doses, with half the quantity of water. The patient should instantly repair to bed, and be well covered so as to encourage perspiration. Within two hours of the first dose, a second may be given, and at the end of three hours after the second dose, the patient may be sponged with a little warm water. On no account allow a chill to take place, and this may best be guarded against by performing the operation under the bed clothes.

In acute and chronic diarrhœa I have found the tincture very beneficial, particularly that variety of the disease depending on dyspepsia or want of tone in the stomach. I have also used it with success in chronic dysentery after having administered the other usual remedies with no good results.

I feel persuaded from an extensive and impartial trial of this medicine that it is the only one at present likely to take the place of quinine in the treatment of fever, and is one of the best astringents in the diseases I have mentioned, if given advisedly. For a further report on this drug I refer my readers to Dr. Stiven's paper, pp. 416 to 450, vol. vi., of Indian Annals. Dr. Stiven recommends the tincture, prepared by macerating the bark in alcohol, and says "the tincture which is frequently made from the extract is rather a complicated way of preparing it." In my opinion the latter is the more useful of the two, inasmuch as it contains much more of the active principle than the preparation proposed by Dr. Stiven. Boiling alcohol must dissolve considerably more of the berberine from the extract, than cold alcohol from the bark—besides which a great deal of spirit is lost in the absorption by the bark.

I have also succeeded in obtaining the alkaloid in a crystalline form from the "Mahonia," a variety of the Berberaceæ, with large primate leaves—B. Lichenaultië. The fruit grows at the top in clusters, round, and is of a deep purple colour when ripe. The bark is considerably corrugated and fissured in the perpendicular direction—inner layer is of an intensely yellow colour.

From this variety I consider that a greater amount of the alkaloid can be obtained, than from the other species—

although I am not prepared as yet to say if it is equally efficacious.

The following is the process by which the berberine is obtained.

A quantity of the bark and root is coarsely powdered and boiled in a sufficient quantity of water for an hour, and then strained. This is repeated three times, or until all the bitter principle is extracted. The whole of the decoctions are then boiled together until they attain the consistence of an extract—care must be taken at the last to evaporate gradually.

Boiling alcohol is then poured on the extract which dissolves the berberine, and leaves a residuum of a blackish gummy matter.

The alcoholic solution is afterwards placed in a retort and distilled to half its quantity, or until it attains the consistency of liqueur. It is then set aside in an open vessel to crystallize. In about from fifteen to twenty hours the bottom and sides of the vessel will be found covered with impure crystals, and the mother liquor may be poured off. The crystals are then to be washed two or three times in cold alcohol or water; and as soon as all the gummy extractive matter has been washed away, the crystals are dissolved in boiling water. To this solution hydrochloric acid to saturation is to be added.

After remaining about four or five hours, the whole is to be thrown on bibulous paper and filtered. The crystals are then collected and dried at a temperature of 120°.

This salt may be termed the Hydrochlorate of Berberine,* and ought certainly to be added to our Materia Medica.

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* Mr. Stewart obligingly forwarded to us a specimen of this new salt for examination. We have requested Mr. Mayer, Professor of Chemistry, to report upon it, and we shall probably refer to the subject in a future Number.—Ed. *M. Q. J.*

Art. XII.—*Description of a Lusus Naturæ.* By Assistant Apothecary R. Wilkins, Assistant to the Professor of Anatomy and Physiology, Madras Medical College.

A double male fœtus of nine months having but one head and neck. On compressing the latter two vertebral columns were felt, there were two trunks connected together anteriorly as low down as the navel, there was but one thoracic, and one abdominal cavity, there were four upper extremities, the hips, together with the lower extremities were separate and distinct, these were all well formed with the exception of two feet which were inverted and bore a striking resemblance to that variety of deformity called talipes varus; the head in its dimensions exceeded that of a single fœtus of the same age, and its cavity contained two distinct brains, one of these had attained a much higher degree of development and was lodged at the forepart, the cerebral hemispheres forming an interval posteriorly, into which was received the anterior portion of the smaller brain; the face was normal; there were four ears, two occupying their ordinary situation, and the other two closely approximating to each other at the back of the head, a little below the site of the occipital protuberance, with their helices directed outwards and having between them in the mesial line two small eminences.

The organs within the chest were double, with the exception of the trachea, which was single; the hearts were situated one in front and the other at the posterior and left side of the monster; there was but one œsophagus and one stomach. The small intestine was single to the extent of about half its length, when it bifurcated and continued double throughout the remainder of the alimentary tract, the remainder of the abdominal organs were double. The liver which was placed on the right side was unusually large, it occupied the greater part of the abdominal cavity and nearly the whole of one side of the chest; the umbilical cord was single, somewhat thick, and a section of it exhibited the orifices of five vessels, one of these appeared larger than the rest, and was probably that of the umbilical vein.

The monster was forwarded to the Museum of the College by Mr. L. Gorman, Resident Apothecary of the Lying-in-hospital.

[The accompanying illustration shows some of the peculiarities above described.—Ed. *M. Q. J.*]

DRAWN BY A. SARREN. - LITHº BY J. DUMPAY. CHEPAUK. 1861. GOVTº. LITHº PRESS, CENTRAL OFFICE OF P.W.

PART II.

REVIEWS AND NOTICES OF BOOKS.

On the Origin of Species by means of Natural Selection, or the Preservation of Favoured Races in the struggle for Life. By CHARLES DARWIN, M.A., F.R.S., F.G.S., F.L.S., &c. Author of '*Journal of Researches during H. M. S. Beagle's Voyage round the World.*' Fifth thousand. London, 1860 : JOHN MURRAY.

THE author of the now celebrated work which we propose to review, is perhaps better known to most of our readers by his observations and theories upon the formation of coral islands in the South Pacific, than by his monograph on Cirripedes. The former subject is more attractive to any but the most enthusiastic naturalists, than the latter. But while Mr. Darwin has established a claim to the gratitude of every student of nature by his researches and writings upon two subjects, of which previously little was known with accuracy, it is upon the qualities displayed in the investigation of the structure and habits of an obscure group of molluscs that we should rely as evidence that he has a right to be heard with respect upon the "mystery of mysteries"—the Origin of Species. Close and accurate observation, patient and persevering accumulation of facts, however apparently trivial in themselves, and careful deduction from the materials thus obtained, are needed by the naturalist who will put forward views opposed by high authorities, and repulsive to the prejudices of most of his readers, in order that he may have a chance of convincing or even of obtaining a fair hearing. These conditions Mr. Darwin has fulfilled.

Nor have we in the work before us the statement of a crude theory hastily taken up. Mr. Darwin's views on the Origin of Species are the result of twenty two years of thought and study, and patient collection of facts in any way connected with the subject. From 1837, when the idea of studying the question first occurred to the author in South America, up to the time of the publication of the Abstract before us, his inquiries have been steadily directed to one object; and every fact in natural history, reported

or observed, has been examined with reference to its bearing upon the origin of species. In 1844 Mr. Darwin formed the conclusions enunciated in 1860. His complete work, to the appearance of which naturalists, whatever their opinions upon the immutability of species, will look forward with eager expectancy, will contain the results of the labors of an ardent student of nature's secrets, during a period of a quarter of a century.

Mr. Darwin does not stand unsupported by authority. Mr. Wallace pursuing his researches independently in the Malay Archipelago, has recently arrived at conclusions but slightly different from his. Sir C. Lyell, formerly a strenuous upholder of the immutability of species, has modified if not abandoned his former views. Dr. Hooker lends the support of his high authority and has supplied abundantly illustrative facts. Prof. Huxley is another able ally. The absence of formidable opposition, the feebleness generally of the attacks of hostile critics, and the silence of men of science who are known to hold opinions different from Mr. Darwin's, are scarcely less valuable testimony in favor of the plausibility of his views than the support of his allies. At the recent scientific congress in the United States, the question of the mutability or immutability of species was studiously avoided—even by Prof. Agassiz—although he is said to have elsewhere expressed total dissent from Mr. Darwin's conclusions, and even doubt of some of his facts. Prof. Owen in his recent work "Palæontology" has also avoided direct collision. He has contented himself with enunciating what he strangely calls an 'axiom'—"the continuous operation of the ordained becoming of living things." We must confess ourselves unable to determine whether this 'axiom' is opposed to Mr. Darwin's conclusions or not. To us it is almost—we cannot bring ourselves to say *quite*—unintelligible. To all it must be obscure.

Before proceeding to examine the work itself, one more preliminary observation must be made. Circumstances into which we need not enter now, rendered it advisable to put forth a brief abstract of Mr. Darwin's conclusions, and the arguments which appeared to him as satisfactory as the nature of the subject allows. The facts upon which these arguments were based are for the most part reserved for the future work. It is obvious that this is a serious disadvantage to the author. Those who are unwilling to accept his conclusions can avoid confession to his arguments by demanding

his supporting facts. The disadvantage is not imaginary, the objection has actually been made by a recent hostile critic. In estimating the value of arguments dependent upon unstated facts, we must be guided by our knowledge of the author's candour and competency to judge of those facts aright. In the present instance, Mr. Darwin's clear and forcible statement of the strong objections to his theory leaves us no room to doubt his candour; while the many original observations and experiments which are scattered through this small volume, taken in connection with the use made of them, give us confidence in his judgment.

We shall give Mr. Darwin's general conclusion in his own words :—

"I am fully convinced that species are not immutable ; but that those belonging to what are called the same genera, are lineal descendants of some other and generally extinct species, in the same manner as the acknowledged varieties of any one species are the descendants of that species. Furthermore, I am convinced that natural selection has been the main but not exclusive means of modification." (p. 6.)

Other causes of modification are admitted to have had some influence ; but little in comparison with natural selection. Such are the external conditions under which animals or plants are placed—as climate and food—habit, and some others. It will be remembered that the author of "Vestiges of the Natural History of Creation" laid great stress upon these modifying forces. He supposed them to have been the *causes* of the modification, or rather "development," of one form into another. Mr. Darwin, on the other hand, maintains that certain modifications are produced *first*, by "variation," and that these become permanent if climate, food, and other external conditions are such, that the modification gives advantage to the individual and its descendants in the "struggle for life."

Natural selection, then, is the great cause of modification, and consequently, of that vast variety of animal and vegetable forms which we see around us. This wonder-working principle is thus explained.

"As many more individuals of each species are born than can possibly survive ; and, as consequently, there is a frequently recurring struggle for existence, it follows that any being, if it vary however slightly in any manner profitable to itself ..... will have a better chance of surviving, and thus be *naturally selected*. From the strong principle of inheritance any selected variety will tend to propagate its new and modified form." (p. 5.)

The "direct effects of the conditions of life" are, according to our author, "unimportant in comparison with the laws of reproduction, of growth and of inheritance." His "impression is, that with animals such agencies (heat, moisture, light, food, &c.) have produced very little direct effect, though apparently more in the case of plants..... Nevertheless some slight amount of change may, I think, be attributed to the direct action of the conditions of life—as in some cases increased size from amount of food, colour from particular kinds of food or from light, and perhaps the thickness of fur from climate."* (pp. 10,11). "Habit also has a decided influence." (p. 11.) Again (p. 43.) "I believe that the conditions of life, *from their action on the reproductive system*, are so far of the highest importance as causing variability."

We are inclined to think that Mr. Darwin, in his zeal for his favorite principle of natural selection, rather under-rates the modifying power of external conditions. We think it probable that many of the differences observable between the "varieties" of the human species are due to these causes. We may give as an illustration the fact that the negroes born in Africa and imported into Cuba, are easily distinguishable from the descendants of the original slaves by the slighter make of the latter. This change has been effected in (comparatively) a very short period. The principle of natural selection would, it appears to us, lead us to expect a result the reverse of the actual one. So would the usual effects of food and habits of life. It would appear that in this instance we must attribute to climate, acting through but a few years, a considerable change of structure in a variety of mankind. But we have not space to discuss either the general question at which we have hinted, or the particular instance mentioned above.

If Mr. Darwin's theory be sound, it is obvious that we must attach to the words "species" and "variety," other ideas than those which they have hitherto represented. The question is not, however, a merely verbal one, as it is sometimes strangely represented to be. As regards the word "species" naturalists have hitherto attached to it an idea perfectly definite. As Archbishop Whately points out, when

* It is elsewhere suggested that the thicker fur of animals in cold climates may be the result of natural selection. Those individuals which happened to be born with better means of resisting cold were thus preserved, and propagated offspring like themselves, when those less protected perished.

applied to organized beings, a species is a *real thing*, which in its ordinary logical application it is not :—" It is always applied (when we are speaking strictly as naturalists to such individuals as are supposed to be *descended from a common stock*,) or which *might* have so descended: viz., which resemble one another (to use M. Cuvier's expression) as much as those of the same stock do:"* (the latter clause being added, apparently, to meet the possible case of separate creations of different individuals or pairs of the same kind.) Naturalists are not always able to determine whether a group of individuals is a "species" or a "variety;" but this means that they cannot tell whether those individuals have descended from the stock (hermaphrodite or bisexual) from which another group which they resemble has sprung, or from a different one. Descent from distinct stocks, then, is the essential difference of "species"—descent from the same stock modified, that of varieties—in the common language of naturalists. Let Mr. Darwin give in his own words the meaning which he, on his theory, attaches to those important words :—

"I look at the term species, as one arbitrarily given for the sake of convenience to a set of individuals closely resembling each other, and that it does not essentially differ from the term variety, which, is given to less distinct and more fluctuating forms. The term variety again, in comparison with mere individual differences is also applied arbitrarily, and for mere convenience' sake." (p. 52.)

Let us now state briefly the steps by which Mr. Darwin endeavours, we think, with considerable success—to establish his theory.

There is in all organized beings a tendency to vary in a greater or less degree from their parents—whether under domestication or in the natural state. A variation having appeared tends to become hereditary, with occasional reversion to ancestral forms. But some variations are more favorable than others to existence in the "struggle for life," which is ever going on. These can be taken advantage of for the preservation of the individual and the race—and, as a corollary to these last two propositions, there will be on

* Whately's Logic, Book IV. c, v. sect. 1. We give the passage from M. Cuvier's *Regne Animal.* "Varieties are accidental subdivisions of species .....Generation being the only means of ascertaining the limits to which varieties may extend, species should be defined—*the reunion* of individuals descended one from the other, or from common parents, or from such as *resemble them as closely as they resemble each other:* but although this definition is rigorous, it will be seen that its application to particular individuals may be very difficult when the necessary experiments have not been made."

the whole improvement in organization. Having established these premises the author replies to the most obvious and most serious objections to which his theory is open; and afterwards shews that it serves to explain many facts in nature, which on any other hypothesis are inexplicable. This process is rigidly logical in its form. Induction in both its senses—the investigation and collocation of facts and deduction of inferences from them—is followed by verification—testing the truth of the conclusions by applying them to existing facts.

The book contains fourteen chapters. Chap. I. treats of Variation under Domestication; Chap. II., Variation in the Natural State; Chap. III., the Struggle for Life; Chap. IV., Natural Selection; Chap. V., Laws of Variation; Chaps. VI.—X. are devoted to answering objections; Chaps. XI—XIII., contain applications of the theory to the explanation of facts, and Chap. XIV., gives a summary of the whole Abstract. We shall endeavor to give our readers a sketch of this remarkable work, and shall conclude with a few remarks upon the question which is, we believe, the great obstacle to the reception, and even to the fair examination of this and all other theories of development of organization. Is man the result of a special act of creative power, or is he merely a product of "Natural Selection," and development from lower—from the lowest—forms of life?

Certain degrees of variation we casually perceive in every individual, either of our own or any domesticated species—differences of feature, constitution, disposition, &c. We see, too, that these are inheritable, and we know that they frequently disappear for one or more generations, and then reappear. We are familiar with instances of this in many morbid diatheses of common occurrence—the rheumatic, the gouty, the maniacal, and others. But the principles of variability, inheritability of variations, and tendency to revert to ancestral forms, are much more strongly brought into view by study of the domesticated animals and plants which man has selected for use or pleasure. When we consider the numerous varieties of the dog, or the cabbage, differing as they do widely from each other, and yet known to be descendants from the same original stock, we can scarcely be surprised at any amount of variation in other instances. And when man has effected so much in modifying, or selecting and rendering permanent, modifications useful to himself, by accumulating peculiarities separately inappreciable by

an ordinary eye, in the comparatively few years during which he has been an inhabitant of the earth, what degree of modification may we not conceive possible to result from the action of *natural* selection employed through the lapse of countless ages?

Mr. Darwin selected for study the numerous and remarkably definite varieties of the domestic pigeon. His demonstration of the fact that all these varieties are descendants from the *Columba Livia* is most worthy of attention, as an example of the mode of argument applicable to zoological subjects, as well as of the author's powers of close and conclusive reasoning. We cannot doubt either the common descent of all these varieties, or that, if this were not known, several of them would be ranked as distinct *genera.* In this instance we find forms admitted to be only "varieties" differing more than some "species," as much as some "genera." The inference is irresistible. What is actual in the case of the *Columba Livia* is possible, nay, is highly probable, in other cases. When modifications so great as these have been produced by human selection in two or three thousand years, why may not the slow but constant process of natural selection, acting through countless millions of centuries, have modified the descendants of some extinct form into types so distinct as to be now ranked as different species, or assigned to different genera or orders—nay, perhaps, even to different subdivisions of the animal or vegetable kingdom?

Before passing on to variation under nature, we must notice the distinction pointed out between man's selection and nature's. Man selects for his own benefit—nature, for the advantage of the race modified. When a peculiar 'breed,' selected and maintained by man for his own use, ceases to be useful, it perishes. The ancon sheep had disappeared completely a few years after the introduction of the merino, its peculiarity of structure then ceasing to be valuable. This well-known case is a striking instance of man's "methodical" selection, "unconscious" selection has improved the varieties of horses, dogs, and cattle; those individuals only being allowed to breed which are best of their kind, for the purpose for which they are maintained. But in both cases the good of the animal itself is not considered.

On the other hand, when a variation arises in nature, if it aid the individual in the struggle for existence, it is pre-

served and inherited by its offspring. If it be useless, it may or may not disappear. If it be injurious, the individual perishes. Such at least is the rule. Mr. Darwin lays great stress upon the fact that no modification will be preserved by nature for the benefit of other organisms, still less for the injury of the one modified. This principle, if true, destroys many of the "wonderful provisions of nature," which we read of in popular, and even in scientific works, on Natural History. The rattle-snake was not endowed with a peculiar conformation of the caudal vertebra in order that a warning might be given to his prey or to man to escape. On Mr. Darwin's theory the rattle, having arisen in the course of ages in an individual Ophidian, was, in some way unknown to us, directly favorable to its preservation in the struggle for life. Its offspring inherited the peculiarity, and by its aid gradually superseded its rattle-less congeners, and "improved them off the face of the earth."*

To take another instance. At a recent meeting of the British Association an account was read, of a certain minute lepidopterous parasite which subsists upon the waxy secretions from the surface of the Fulgora Candelaria. If we remember aright, this secretion was supposed to be a "provision of nature" for the benefit of the parasite. On the contrary, Nature provided the secretion for the advantage of the Fulgora—that is, some ancestor of the latter in whom it first appeared, gained by its means a superiority in the struggle for life, which, being beneficial, descended to its posterity. The Lepidopteron may be said to have taken advantage of what was never intended for its benefit.

Proceeding to "Variation under nature," which is more to the purpose than variation under domestication, our author expresses his opinion that the observation of naturalists has not been directed to this point, as much as its importance deserves. The detailed result of his own researches is not yet before the world. His conclusion from them is that,

"Certainly no clear line of demarcation has as yet been drawn between species and sub-species, that is, the forms which in the opinion of some naturalists come very near to, but do not quite arrive at the rank of species; or again between sub-species and well-marked varieties, or between lesser varieties and individual differences. These differences blend into each other in an insensible series: and a series impresses the mind with the idea of an actual passage." (p. 51.)

* We select the rattle-snake merely for illustration. The "rattle" may have been in itself useless, but correlated with some advantage.

Thus much must, we think, be conceded to Mr. Darwin's arguments on this point, necessarily destitute as they at present are of detail of supporting facts, that in very many cases it is impossible to decide whether a plant is a "variety" or a "species," and that botanists of great and equal celebrity are at issue upon the question. Mr. Darwin gives two examples which we will quote. The *Primula vulgaris* and *veris* "differ considerably in appearance; they have a different flavour and emit a different odour; they flower at slightly different periods; they grow in somewhat different stations; they ascend mountains to different heights; they have different geographical ranges; and lastly, according to very numerous experiments made during several years by that most careful observer, Gärtner, they can be crossed only with much difficulty. We could hardly wish for better evidence of the two forms being specially distinct. On the other hand they are united by many intermediate links, and it is very doubtful whether these links, are hybrids; and there is, as it seems to me, an overwhelming amount of experimental evidence, showing that they descend from common parents and consequently must be ranked as varieties."*

Again,—

"Look at the common oak, how closely it has been studied; yet a German author makes more than a dozen species out of forms which are very generally considered as varieties; and in this country the highest botanical authorities and practical men can be quoted to show that the sessile and pedunculated oaks are either good and distinct species, or mere varieties."

In the other division of organic nature :—

"How many of those birds and insects in North America and Europe, which differ very slightly from each other, have been ranked by one eminent naturalist as undoubted species, and by another as varieties, or, as they are often called, as geographical races!" (p. 48.)

It is, we think, quite true that hitherto systematic naturalists have been more anxious to see permanency in 'important' parts of animal or vegetable organization than variation. That it should be so is a natural *idolon tribûs*. There is, moreover, as Mr. Darwin points out, a latent fallacy involved in the assertion that "important parts do not vary." Parts are considered important, *because* they do *not* vary. This is admitted by some naturalists. It is obviously reasoning

* "Mr. Herbert has lately recorded the following experiment :—'I raised from the natural seed of one umbel of a highly manured red cowslip, a primrose, a cowslip, oxlips of the usual and other colours, &c.'"—*Lyell's Principles*, p. 590.

'in a circle' to argue against variation in nature on the ground that "important parts do not vary."

The analogies between species and varieties disclosed by study of organic nature, both in plants and animals, are close and remarkable. They show that species bear in many points the same relation to genera, as varieties to species. Some of these we shall indicate. Our space will not permit us to do more. First, then,—the *species* of plants which are richest in well-marked *varieties* belong to genera, including more than the average number of species. The same tendency to variation which originally caused certain genera to form numerous species continues to produce numerous varieties, *i.e.*, incipient species. Secondly, in large genera several species are found grouped round one to which they are more or less closely allied; in the same manner as a species forms several varieties more or less closely resembling it, and grouped around it. And thirdly, secondary sexual differences occurring in the same species are found in the same parts as those in which the species of the genus differ. For instance, in those Hymenopterous genera in which the neuration of the wings differs in the different species, it also differs in the sexes of the same species. These analogies are what we should anticipate if varieties and species are supposed not to differ essentially. It is difficult to account for them if each species is believed to have been separately created.

In the universal struggle for existence—the constant competition between different species of vegetables and animals, and in still greater degree between different individuals of the same species—the principle of natural selection comes into play.

"Owing to this struggle for existence, any variation, however slight, and from whatever cause arising, if it be in any degree profitable to an individual of any species in its infinitely complex relations to other organic beings and to external nature, will tend to the preservation of that individual, and will generally be inherited by its offspring." (p. 61.)

This competition has been ably handled by De Candolle and Lyell. We can see it going on around us on every side, if we will; but we are likely to overlook it, or to fail to realize the extent to which destruction of organisms is at every moment proceeding. Even Lamarck overlooked other causes of extinction than the efforts of man. This last is the most obvious cause, and we have seen it operating

in the extirpation even of whole races of our own species. But other causes not so patent, to superficial observation, are no less important or rather are much more effective, whether we consider the death of the individual or the extinction of the species. Scarcity of food on the one hand, or on the other, increase of number of enemies; climate, most frequently acting indirectly by favouring other species in competition; epidemics (if we may thus apply the term) are among these causes. But so complex and complete are the relations and interdependencies of different forms of life that "the causes which check the natural tendency of each species to increase in number are most obscure. Of what wonderful increase some species are capable, under unknown favorable circumstances, we see in the case of the wild horse in South America and Australia. The former example is the more remarkable, because extinct species have been discovered in the places where the modern species introduced by the Spaniards have, under changed conditions, multiplied to so prodigious an extent. In India numerous instances will occur to our botanical readers of plants which have spread through the whole peninsula since the discovery of America. The common prickly-pear was, we believe, introduced from the West Indies.

How great would be the increase of each species, were it not checked by competition with others, may be estimated by Mr. Darwin's calculation of the "probable minimum rate of natural increase" of the elephant. One pair of elephants —the slowest breeders known to the naturalist—would produce in five centuries fifteen millions of individuals. While all organized beings tend to increase in geometrical ratio—this tendency must be checked by destruction at some period of life, or the earth would be overstocked.

As an example of the interdependence of organic beings apparently the most unconnected, we would refer to p. 74, where Mr. Darwin shows it to be "quite credible that the presence of a feline animal in large numbers in a district might determine.....The frequency of certain flowers in that district. Other *actual* illustrations are given. We allude to this one in particular, because it has been found fault with as a merely theoretical instance, with the remark that 'one fact would have been preferable to any number of such credibilities. Facts are given too: but the logical sequence of one possibility to another in Mr. Darwin's illustration is perfect. It is a faultless zoological *sorites*.

We shall conclude our analysis of Mr. Darwin's third chapter—on the struggle for existence—with a short quotation :—

"In looking at nature it is most necessary.....never to forget that every single organic being around us may be said to be striving to the utmost to increase in numbers ; that each lives by a struggle at some period of its life ; that heavy destruction inevitably falls either on the young or old, during each generation or at recurrent intervals. Lighten any check, mitigate the destruction ever so little, and the number of species will almost instantaneously increase to any amount." (p. 66.)

"The preservation of favourable variations and the rejection of injurious variations," is Mr. Darwin's definition of Natural Selection. It differs as we before observed from man's selection, in its end. Nature can only operate for the advantage of the being ; man selects for his own benefit. Nature's power of modifying by selection is immensely greater than man's, chiefly from having more time at her disposal.

Domestication would seem to have the effect of rendering the whole organization more plastic. The change of conditions involved in domestication causes or increases variability, by acting through the reproductive system. We can only state these conclusions of Mr. Darwin's and some others, which require investigation and deserve attention. Some of his opinions on hermaphroditism, and comparative fertility of crosses in plants, are curious and striking. Few of our readers, we fear, will have leisure or opportunities for examining for themselves into the correctness of his conclusions ; but even to amateur naturalists they will be interesting.

Hermaphrodites have been usually considered as divisible into two classes—true and spurious. The latter are incapable of self-impregnation ; and the congress of two individuals, mutually impregnating each other, is necessary to reproduction. The common land-snails are an example familiar to all. The true hermaphrodites, on the other hand, *are* capable of self-impregnation, and habitually produce without the aid of a second individual. The oyster is an example. The number of true hermaphrodites has been much diminished of late years, more accurate research having shown that many species supposed to reproduce without copulation, do require the sexual congress of two individuals. Mr. Darwin sees reason to believe that "no organic being self-fertilises itself for an eternity of generations;" that "a cross with another individual is occasionally—perhaps at

long intervals—indispensable." The difficulty, if not impossibility, of demonstrating the truth of this opinion in the case of animals is obvious. It would require separate proof in each individual instance ; and where, as in aquatic molluscs, impregnation by a second individual would be effected by the diffusion of the seminal element through the water, the difficulty of proving by observation or experiment that such impregnation either did or did not occur, is plainly almost insuperable. But in no known case of hermaphrodite animals are the organs of reproduction so placed, that impregnation from without is physically impossible. One such case would, of course, be fatal to Mr. Darwin's supposition. On the other hand, he has been able to prove that two individual cirripedes, generally self-fertilising, do sometimes cross.

In support of the supposition that " with all hermaphrodites two individuals, either occasionally or habitually, concur for the reproduction of their kind," a large number of facts have been collected by Mr. Darwin which show that, in both animal and vegetable kingdoms, a cross between different varieties, or different 'strains' of the same variety " gives vigour and fertility to the offspring : while close interbreeding diminishes them."* It seems a fair inference from these propositions that continual self-fertilisation would be injurious, and occasional crossing by another individual beneficial, if not essential. In the case of plants, which are mostly hermaphrodite, it seems established that pollen of a distinct *variety* is prepotent over a flower's own, for impregnation ; while the latter is prepotent over that of another species.

How are we to account for divergence of character? How do the minor differences between varieties, (or 'incipient species,') become developed into the greater differences which confessedly exist between fully-established species? Natural selection can only act for the advantage of the being on which it acts. Is the development of a less into

* In relation to the human species this subject has not been studied with sufficient attention except in the United States ; nor are the facts established sufficiently influential upon practice. A recent analysis of the immates of the charitable institutions of the United States, shows that 10 *per cent.* of the deaf and dumb, 5 *per cent.* of the blind, and 15 *per cent.* of the idiots, are the offspring of first cousins. Accordingly, such unions are, we believe, prohibited in Kentucky. Another return shows (if we remember rightly—we are unable to refer to it), that of 31 children of brothers and sisters, or parent and offspring, 29 were deformed or idiotic or both.

a greater degree of diversity beneficial to the race of animal or plant? Otherwise the principle of natural selection will not explain it.

"Take the case of a carnivorous quadruped, of which the number that can be supported in any country has long ago arrived at its full average. If its natural power of increase be allowed to act, it can succeed in increasing only by its varying descendants seizing on places at present occupied by other animals; some of them for instance being enabled to feed on new kinds of prey, either dead or alive; some inhabiting new stations.....and some perhaps becoming less carnivorous. The more diversified in habits and structure the descendants of our carnivorous animals become, the more places they will be enabled to occupy. What applies to one animal will apply throughout all time to all animals." (p. 113.)

In plants, too, diversity is favorable. Those which succeed best in a new country are *not* those most nearly allied to the original inhabitants, but in most cases *generically* distinct. Since then, this distinctness has proved favorable to the strangers, equal diversification would have been profitable to the indigenes, if it had occurred.

"In the general economy of any land, the more widely and perfectly the animals and plants are diversified for different habits of life, so will a greater number of individuals be capable of their supporting themselves."

Of the laws of variation scarcely anything can be said. Why animals and plants should vary, or why they should vary in one part or organ more than in another, we cannot tell. We have seen that Mr. Darwin attributes little direct influence in producing variation, to change of climate and conditions of life; while allowing that by the indirect action of these on the reproductive system, variability is considerably increased. This influence is more potent in the vegetable than in the animal kingdom. Disuse is in some cases a powerful cause of variation. Several interesting examples are given. We shall notice but one—the cave-animals of Styria and Kentucky.

As it is inconceivable that the possession of eyes or sight should be *injurious* to the animals inhabiting these caves, Mr. Darwin attributes their absence to disuse. He supposes certain animals with normal optical powers to have gradually migrated, in the course of generations into the caves, from the neighbouring country. The farther from the light of day they penetrated, the less necessary eyes became—and the less they were used, until in the deepest parts of the cavern

they were no longer developed. The transition is now observable—the powers of vision are proportional to the amount of light—that is, to the distance from the mouths of the caves. The affinities of these cave-animals to the ordinary inhabitants of the neighbourhoods, both in Europe and America, seem to show that the caves were, as our author supposes, peopled by immigration from the surrounding country, not by creation of forms especially suited to lightless life : while the latter hypothesis is also opposed by the fact that the inhabitants of the two sets of caves, similar in geological conditions and placed in nearly similar climates are not more closely allied in organization than the non-subterranean inhabitants of the two countries. On the theory of special creation to suit special conditions, we should expect closely similar forms in Europe and America, under conditions so closely alike as those found in these two sets of caves.

One other important principle only, can we notice in the chapter devoted to Laws of Variation. Mr. Darwin defines "Correlation of growth" to be such combination and interdependence between different parts of an organization "that when slight variations in any one part occur, and are accumulated through natural selection, other parts become modified." (p. 143.) The examples given here and elsewhere will illustrate the principle. Thus "modifications accumulated solely for the good of the young or larvæ will, it may safely be concluded, affect the structure of the adult." Draught cattle in Africa and dogs in Northern Asia and America are matched by color by the savages; that is, qualities of speed, strength or endurance are correlated with certain colors. Cats with blue eyes are invariably deaf, and the tortoise-shell color invariably correlated with the female sex. White sheep and pigs are differently affected from colored individuals by certain vegetable poisons. Hairless dogs often have imperfect teeth, (but this case may be explained by homology.) Other instances will occur to our readers, in which certain formations or peculiarities are invariably or generally asssociated with others, without our being able to assign to the phenomena any common cause, or connexion of cause and effect. The correlation of true ruminancy with cloven hoofs is an obvious example.

To the members of our profession the study of morbid correlations is most important. With many such we are all

familiar, and in the majority of cases, perhaps, our knowledge is empirical—we can give no reason for connexions which we perceive to exist either constantly or generally. The association of a certain well-known "aspect," with malignant disease—of certain physical appearances with the strumous diathesis—of bronzed skin with disease of the supra-renal capsules—are familiar instances. Many others could be adduced, in which the common cause of the correlated phenomena or their relation as cause and effect is hidden from us, or but obscurely known. The knowledge of the correlation is not, however, on this account the less important in our practice.

Our object in the foregoing pages has been, to give those of our readers whose tastes or pursuits prevent their perusal of Mr. Darwin's work, a sketch of the arguments, by which he believes he proves that "varieties are incipient species"—that the ancestors of all species—all genera—even all orders—were at some early period merely varieties. We now come to the second division of the argument—the answering of objections. We must remind our readers that the question at issue between our author and those who hold the immutability of species and the separate creation of each, is a contest of probabilities. Our view is a "theory" as much as the other. To both there are objections. 'There are objections to a *plenum*, and objections to a *vacuum*, but one of them must be true.' We cannot expect *demonstration* on either side. "To us," says Bishop Butler, "probability is the very guide of life." It must be our guide in determining which of the two theories in question is to be received by naturalists.

Mr. Darwin is as conscious of the magnitude of the difficulties opposing the reception of his theory as any one can be. "Some of them," he says, "are so grave that to this day I can never reflect on them without being staggered; but," he adds cheerfully, "to the best of my judgment, the greater number are only apparent, and those that are real are not, I think, fatal to my theory." Our limits will allow us to notice but three objections—the absence of transitional forms in nature—the more exquisite instincts—and the phenomena of hybridity.

"Why, if species have descended from other species by insensibly fine gradations, do we not every where see innumerable transitional forms?" Mr. Darwin's answer is briefly this. New forms become permanent only because of their

superiority in some way to others. In the struggle for existence they overcome the inferior forms. 'Extinction and natural selection go hand in hand.'

But these intermediate forms have at one time existed, though they perished in the contest with superior organisms. Why do we not find them in the fossil state? Mr. Darwin replies, because of the imperfection of the geological record: and his ninth chapter is devoted to the working out in detail of this reply.

Whether the avowed imperfection of the geological record is sufficiently great to account for the rarity of transitional forms in our collections of fossils, we cannot pretend to determine. No geologist can fail to be conscious of the fact, that the geological record is imperfect to a very high degree. While every day adds new fossil forms to our Museums—and forms which are frequently 'transitional' between fossils previously known, we cannot but feel how few are the extinct species of which we possess specimens, in comparison with the lapse of geological time. When we consider the complex conditions which must be fulfilled—as enumerated by Lyell or any systematic geologist—in order that any bone or shell of a dead animal may be preserved in a formation and become a "fossil," we cannot but feel that few forms indeed have been preserved, compared with the countless numbers that have existed. And when we reflect upon how little of the earth's crust has been thoroughly examined, we must admit that the fossils we now possess are few indeed compared with those which still lie buried in the strata.* Keeping these facts in mind we shall not be surprised on comparing complaints of the 'imperfection of the geological record' with our lists of fossil forms or the collections in our museums. We shall rather wonder that so many transitional forms have been preserved and discovered by man. We shall look upon Professor Owen's success in connecting the ruminants and pachyderms into one group by fossil gradational links as a result of palæntological research not to have been anticipated. We shall perhaps admit that Mr. Darwin partially removes the objection we have stated above, by his *argumentum ad ignorantiam.* We must allow the possibility that as our geological researches proceed, more of the transitional links will

* One of these conditions we must mention, for Mr. Darwin lays great stress upon it. Fossils can only be found in deposits formed *during subsidence.* While a sea-bottom is stationary or rising none will be preserved.

be discovered. But before leaving this subject we must not omit to state what are the links to be expected on Mr. Darwin's theory. They are not forms transitional between two contemporaneous species, but between each of these and a common ancestor, except in the rare case where an organic form and its modified descendant have continued to co-exist.

This is important to bear in mind when comparing the fossils we possess with what Mr. Darwin's theory should lead us to expect.

We have not space to notice the answer to another objection connected with the foregoing. 'Why do we not see the intermediate forms in the stage before extinction?' The reply is ingenious at least if not perfectly satisfactory.

Can we conceive instinct to have reached the state of (almost) perfection which we observe in the hive-bee, for instance, by the process of gradual improvement by natural selection? The seventh chapter contains our author's answer. We regret that we can only give a meagre sketch of it.

Firstly, instincts have, with a few obvious exceptions, been little observed; but in those which have been studied *gradations* exist. Three examples of such gradations are given. The peculiarity in the reproduction of the cuckoo, the slave making instinct of some species of ants, and the formation of the comb by bees, are shown to exhibit distinct gradations of excellence. Secondly, of the instincts of extinct species we can from the nature of things know nothing. We cannot therefore trace the progressive steps of Natural Selection from ancestors in a remote antiquity, as we can to some extent, in the case of physical organization.

"One special difficulty remains which at first appeared insuperable and actually fatal" to the theory—the case of the sterile females in insect communities; "for these neuters often differ widely in instinct and in structure from both the males and fertile females, and yet, from being sterile they cannot propagate their kind." (p. 236.)

Mr. Darwin supposes the peculiar instincts of the sterile females to have become "correlated" with sterility, ascertain forms of the horns of *oxen*, or the barren head of the cauliflower. Natural selection may act upon the family in which neuters have appeared, though it cannot apply to these sterile individuals themselves. In neuters, too, we do find *gradations*—in the same species, in the same family or

nest. The case would seem, as Mr. Darwin observes, a fatal objection to the development theory of Lamarck.

In the view hitherto generally entertained by naturalists, species intercrossed are sterile, or their offspring functionally imperfect and incapable of propagation; and varieties intercrossed are fertile—themselves and their offspring.* If there is no essential difference between species and varieties why should this be so? Have not intercrossing species been "specially endowed with sterility in order to prevent the confusion of all organic forms?"

Mr. Darwin freely admits the general fact that species are sterile and varieties fertile when intercrossed; and that a broad distinction is thus made between species and variety. That the rule is universal he denies—and points out the *petitio principii* of which they are guilty who maintain its universality. When animals or plants interbreeding are sterile, they class them as different species *because* they are sterile. He believes that the sterility both of first crosses and of hybrid offspring is simply incidental, or dependent on unknown differences, chiefly in the reproductive systems, of the species which are crossed. The analogy between hybridism and grafting is very close.

"In the same manner as in grafting trees the capacity of one species or variety to take on another, is incidental on known differences in their vegetative systems, so in crossing, the greater or less facility of one species to unite with another is incidendal on unknown differences in their reproductive systems. There is no more reason to think that species have been specially endowed with various degrees of sterility to prevent them crossing and blending in nature, than to think that trees have been especially endowed with various and somewhat analogous degrees of difficulty in being grafted together in order to prevent their becoming inarched in our forests." (p. 276.)

If then, the sterility of species intercrossing, or incapacity of their offspring for reproduction be not essential, but incidental; dependent not upon the fact that they are "species," but upon unknown laws and causes,—the phenomena of hybridism form no objection to the theory that varieties and species are not *essentially* distinct.

Again, if sterility were an "essential difference" of hybrids —as contradistinguished to mongrels—we should expect that it would be absolute and complete, or at least constant

* John Hunter believed the test of 'species' to be incapacity for propagation or for producing fertile offspring.

in degree. It certainly is not so. Neither are hybrids—in either kingdom—invariably sterile, nor mongrels invariably fertile. Some undoubted species produce fertile offspring. Some no less undoubted varieties will *not* produce when crossed. The sterility of hybrids graduates, from causes unknown to us, and confined to the reproductive system. The fertility of reciprocal crosses often differs in degree. Some hybrid plants are *perfectly* fertile—nay, some plants can be more easily fertilised by the pollen of a different species. The primrose and cowslip, believed on good grounds to be varieties, have been repeatedly crossed without result. In animals experiments are less easily made than with plants; one reason being that few will breed freely in confinement. As far as is known, hybrids between widely separated species can be more easily made in animals than in plants, but the hybrid animals are more sterile. The latter result may probably be due in a great measure to the close interbreeding which the limited nature of such experiments necessitates. It would seem that the sterility of first crosses is general, but *not* universal. Mr. Darwin enumerates several exceptions. Since the appearance of his work it has been stated that an enterprising Frenchman has established a perfectly fertile hybrid breed between hares and rabbits, which he calls *Leporides*. Those two species differ so widely in structure and habits that the case, if authentic, is a remarkable illustration of the proposition, that sterility or fertility gives no clear distinction between species and varieties.

Finally, "in all other respects, excluding fertility, there is a close general resemblance between hybrids and mongrels." They agree in very many important particulars. They differ in but few.

We have but little space left in which even to enumerate some of the facts which are more consistent with Mr. Darwin's theory, than with the separate creation of each species, existent or extinct.

In the tenth chapter certain facts of geological succession of species are shown to be easily explicable on this theory. For instance, a species never re-appears. Why should it not, if each has been separately created? If similar external conditions recur, why should not the extinct species be re-created to suit them? On Mr. Darwin's theory a species *could not* re-appear. Even if a new species exactly filled the place of an extinct predecessor, it could not be the same. It has descended from different progenitors and

will have inherited from them some characters which the extinct organism did not possess.

Again, all forms, existent and extinct, make up one great system, *because* all are counted together by generation. To say that this is so "to complete the scheme of nature," or "for the sake of symmetry is," as Mr. Darwin elsewhere remarks, merely a re-statement of the fact.

Finally, the succession of the same types within the same areas, during the later tertiary periods, is evidently not due to climate or other external conditions, and therefore is not the result of special creation adapted to such conditions. We find on the one hand, in parts of Australia and South America, of the same latitude, and differing little in physical conditions—in the former the Marsupial type, in the latter Edentata. On the other hand we find, in both those countries, these types continued through tertiary and existing periods, during which physical conditions were so dissimilar.

And in the geographical distribution of plants and animals, we see numerous facts readily explicable on the theory of descent, with modification, by natural selection: facts which cannot be accounted for by difference of climatal or other physical conditions. Where "barriers" exist preventing dispersal of any animal or vegetable form, there we find distinct Faunæ or Floræ, or both. In the same latitude in Africa, Australia, and South America, the faunæ are widely different. The marine inhabitants of the Atlantic and Pacific Oceans at the Isthmus of Panama are remarkably dissimilar; and in a less degree differences are found in two parts of a continent divided by a chain of mountains or other barrier. Where no barriers exist there is, on the contrary, a marked affinity between the inhabitants of the same sea or land, in parts however distant.

Oceanic Islands—situated 300 miles or more from a mainland—are destitute of Batrachian reptiles and terrestrial mammals. We can understand this if we believe these islands to have been stocked with inhabitants from the nearest mainland. If they were stocked by special creation, we cannot. Cheiroptera *are* found in such islands; and in New Zealand two species peculiar to itself—modified descendants of original immigrants from another land. On the other hand, the other inhabitants of these Oceanic Islands are closely allied to those of the nearest mainland. The species are different, but the genera are the same. Such affinity

exists between the Galapagos and South America, between the Cape de Verd Islands and Africa. Can we understand these facts in the view of special creation? Do they not coincide with the view of descent with modification?

Before leaving the subject of geographical distribution, we would call special attention to Mr. Darwin's experiments and observations, upon the means of dispersal of animals and plants; especially with reference to the glacial period. Ably as this matter has been treated by Lyell in his "Principles of Geology," we look forward to Mr. Darwin's complete work as likely to throw a flood of new light upon an obscure subject.

The phenomena summed up in the expression "unity of type"—the existence of homologous organs in organizations widely different, as the anterior extremity, for instance, as variously modified in man, in the mole, and in the bat—are easy of explanation on the theory of descent. "Final causes" or "utility" are powerless to explain them, or the kindred homologies in the individual, as of the bones of the skull to the extremities. As Professor Owen pointed out, the explanation of the composite structure of the mammalian skull on the ground of its facilitating parturition, will not apply to similar construction in the other classes of vertebrata. The principle of homology explains these phenomena, and is itself inexplicable on the theory of independent creation of each specific form.

Neither will this theory explain the resemblance found between the embryos of the different classes of vertebrata, and between larvæ which may be considered active embryos. Modification by natural selection explains this resemblance; as well as others, such as appearances in early life of characters belonging to allied species or genera—the stripes of the young lion, the plumage of young birds. The modification which first constituted the variety afterwards developed into species, will be inherited sometimes at an age corresponding to that at which it originally supervened. The embryo will be unmodified. "Community in embryonic structure reveals community of descent."

Finally, how will the theory of independent creation of each specific form account for the presence of "rudimentary" parts or organs?—the teeth of young cetacea, the upper incisors of young ruminants, the wings beneath the soldered elytra of some coleoptera, the pelvis and lower extremities of some ophidia or their imperfect lung, and count-

less other instances with which the most superficial observer of nature must be familiar. As these parts are useless to the animal or plant, they cannot be the result of natural selection. They must be due to inheritance. It is difficult to believe that a physiologist could gravely state that the object of "nature" in producing these rudimentary parts was to excrete certain matters which were in excess in the organism. But this explanation is not more unreasonable than reference to "symmetry" or "completion of the scheme of nature." Can any one doubt whether to accept these explanations, or that offered by our author—"the presence of rudimentary organs is due to the tendency in every part of the organization to be inherited."

And thus it is that rudimentary parts have been found so useful in classification. They "may be compared with the letters in a word, still retained in the spelling, but become useless in pronunciation, but which serve as a clue in seeking for its derivation." (p. 456.)

The conclusion at which Mr. Darwin arrives is briefly this. "I believe that animals have descended from at most only four or five progenitors, and plants from an equal or lesser number." He considers his theory of 'descent with modification' to be applicable to 'all the members of the same class.' The numbers of progenitors which he assigns to each kingdom of animated nature, obviously correspond to those of the great classes into which each is primarily divided.

But Mr. Darwin is evidently not content with this degree of simplification, though he feels that his premises will not justify him in carrying it further. 'Analogy' would lead him one step further, he says,—to believe, namely, that "all the organic beings which have ever lived on this earth have descended from some one primordial form, into which life was first breathed by the Creator." (p. 484.) We must avow our hearty concurrence with our author's admission that "analogy may be a deceitful guide." There is nothing in Mr. Darwin's facts or arguments, or in the teachings of philosophy or science which could induce us to follow "analogy" in such a lead. We cannot even admit that any tenable analogy would lead to such a conclusion.

We are far from underrating a logical weapon which has been used with such powerful effect in the cause of 'Religion, Natural and Revealed,' by the greatest metaphysician England has produced. If we admit that any existing

"species" have had their origin in variation, (and naturalists who would shrink from adopting Mr. Darwin's conclusions do now admit this in many instances,) analogy may justly lead us to extend the powers of variation to other cases differing from those only in *degree*. But when the difference between two forms is one of *kind*, analogy is a "deceitful guide." When Professor Owen can show the camel and the pig to be connected by intermediate links, we find no difficulty in inferring by analogy that similar connecting forms may yet be discovered—or, if not discovered, may nevertheless have existed—between organisms as widely separated as they. If we concede to Mr. Darwin that variation, natural selection, and the struggle for existence have had power to develope by slow degrees, in the lapse of countless ages, the rude spherical receptacles for larvæ and honey of the humble bee, into the mathematically perfect hexagonal cell of the *Apis-mellifica*, we may follow analogy to infer that the low intellectual power of the rodent, might have been improved into the rationality of the dog, or of the 'half-reasoning' (but over-rated) elephant. But it appears to us that even were it certain that the Articulata or the Mollusca, the Acrogens or the Endogens were each descended from one pair of progenitors, or from one individual—even on this supposition, analogy would altogether fail to give any ground for concluding that variation and natural selection could bridge over the chasm between the animal and the plant; or effect the development of the gorilla into man.* In the latter case especially, there are, we maintain, differences *in kind*, which nothing less than a fresh act of creative, or at least of modifying energy could have overcome. In this case there is a

> tali dignus vindice nodus—
> 'a God must intervene.'

Mr. Darwin attributes the prevailing belief in the immutability of species, to the difficulty of grasping in the mind the enormous lapse of years which the other theory requires, and the unwillingness to believe in the existence of the intermediate links which are not, and in most cases cannot be seen. The former cause operated against the immediate and general reception of the views put forward by Sir Charles Lyell in his great work the "Principles of Geology."

* Our readers will remember that on Mr Darwin's theory, the gorilla would not be "undeveloped man," but it and the human species would be divergent descendants of an extinct common ancestor.

We cannot but think that the principal objection to Mr. Darwin's views is different from these. It is an objection neither to his facts nor to his arguments, but to his conclusions—real or supposed. We are persuaded that his theory would be gladly received both by naturalists and by all others, if it did not seem to involve the opinion that there is no essential difference between Man and the Quadrumana. The popular answer to all theories of "development" of animal and vegetable life has ever been—is still—'Do you believe men to be descended from apes?'* This is supposed to be an irrefutable *reductio ad absurdum.* It is not so. It is no answer to facts and arguments: or it is at best an answer which may not be unseemly in the mouths of the uneducated, but which philosophers and men of science should be ashamed to put forward. The object of their pursuit is TRUTH. Their instruments are the reasoning powers which their Creator has given to them. Their task is to examine facts and combat arguments, not to examine conclusions only, and reject them if inconsistent with their preconceived opinions. Were it inevitably involved in Mr. Darwin's theory that men were originally apes, it were not the less the duty of the educated to study his reasonings. No doubt some do so—but we fear most men will not.

We believe, however, that Mr. Darwin's theory does not necessarily involve the much dreaded consequence. Whatever his own views on the question may be, we cannot admit that his premises warrant the conclusion that the abyss which divides the highest quadrumane from the lowest savage could ever have been bridged without the intervention of Creative Power. We doubt even the reduction of animals to so few as "four or five" ancestors or pairs of ancestors. If we be asked, where the powers of natural selection are to stop? how many origins of animal organizations are to be supposed? We can only answer that we do not know: that while there seems good reason to believe that very many species and genera have commenced existence as varieties of some pre-existing form, we see no reason to con-

* We have seen an anecdote very lately in the newspapers which illustrates what we have been saying. At a recent meeting of men of science (and others) a certain Bishop met Professor Huxley's defence of Mr Darwin's theory with the usual question, 'Do you believe that you are descended from an ape?' The answer is said to have been, 'I should rather have apes for ancestors than men who refuse to receive truths opposed to their preconceived ideas.'

clude that *all* have so sprung; no reason, either in the nature of things or in the arguments adduced, for limiting the exercise of Creative Power to one, or 'four or five,' or any number of exertions. No doubt the Deity does display in his works something analogous to economy; but we know not, and probably never can know in our present state of existence, how far this principle has entered into the plan of creation of organisms. While we may deem it probable that the diversified forms of animal and plant which we see around us have, in the great plan of creation, sprung from comparatively a few primeval forms, we shall never be able more than dimly to guess at the number of those centres of life. We have, as it seems to us, no ground whatever of analogy or other, for believing that that number was a simple unit.

Mr. Darwin does not assert his belief that the animal and the vegetable worlds are connected by common descent from one primeval ancestor; nor that the "four or five" great classes of the former or the similar or less number of divisions of the latter are so related amongst themselves. He merely hints that "analogy" might lead him to such inferences. We have already stated our opinion that neither his arguments, nor analogy, nor the dim knowledge our feeble minds possess of the Divine plan of the Universe, warrant any such conclusions.

But Mr. Darwin does derive all vertebrata—man of course included—from one pair of ancestors.* Conceding what he quotes from "a celebrated author and divine," that 'it is just as noble a conception of the Deity to believe that He created a few original forms capable of self-development into other and needful forms, as to believe that He required a fresh act of creation to supply the voids caused by the action of His laws'—granting that the facts of homology and embryology, the existence of rudimentary and representative parts and organs, and analogy, give *at least* plausibility to the view that man's corporeal part was derived without fresh exertion of creative energy from some pre-existing organism, not 'human'—admitting so far, can we believe that Man as a whole, including body, mind, and spirit, is a spontaneous development from a lower form? We have no hesitation in answering, No. Man's body and man's passions

* Or one ancestor. Dr. Dufosse seems to have proved by numerous dissections (Annales des Sciences Naturelles) that the Terranus (Perch,) is hermaphrodite.

and some of his emotions—even many of his intellectual powers—may be developments of analogous body, passions, emotions, and faculties of previous and lower organisms. But when "God breathed into his nostrils the breath of life"—life in its truest, highest meaning—"and man became a living soul," a fresh outburst of Creative energy conferred upon some pre-existing, highly organized but unspiritual, form, "the dust of the earth"—qualities and powers *essentially* different from any before possessed on earth, and unattainable without Divine interposition.

It would, we think, be interesting to examine comparatively the intellectual faculties of man and the most highly advanced in mental power of the lower animals. It is impossible to deny "Reason" to these—unless indeed, we define reason to be "those intellectual powers exclusively in which man differs from brutes."* But even the lowest savage enjoys mental powers of which not only is the highest brute destitute, but which we cannot conceive the latter capable of attaining—the germ of which our closest study cannot detect. We have not space to point these out.

But higher, holier far than these are the endowments which pre-eminently characterise Man. The Moral Sense, and the feeling of dependence upon a higher Being—the capacity for Religion—Natural and Revealed, are peculiar to Man and common to every Race. The gift of these and Immortality constituted the creation of Man. These gave him "dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth." By these some high, but still brutal, organism was transmuted into the "Image of God."

And can we not still trace in the complex being Man his double origin?—

> "How poor, how rich, how abject, how august,
> How complicate, how wonderful, is man!
> How passing wonder He who made him such!
> Who centred in our make such strange extremes
> From different natures marvellously mixed,
> Connexion exquisite of distant worlds!
> Distinguish'd link in being's endless chain!
> Midway from nothing to the Deity!
> A beam etherial, sullied and absorbed!
> Though sullied and dishonour'd, still divine!
> Dim miniature of greatness absolute!
> An heir of glory! A frail child of dust!
> Helpless immortal! insect infinite!
> A worm! A god!"

* Whateley's Logic—*Appendix.*

On the Diseases, Injuries, and Malformations of the Rectum and Anus, with remarks on Habitual Constipation. By T. J. Ashton, &c., &c. 3rd Edition. London: T. Churchill, New Burlington street.

Mr. Ashton's work is worthy of good type and superfine paper, but it is just a question whether adding to the thickness of the rag-tissue is the wisest way of swelling out a volume. The subject discussed is eminently practical, and the mode in which it is treated is practical also: the descriptions are clear, and for the most part remarkable for simplicity. So far however as the natural history of the book itself is concerned, the order in which the various affections of the rectum are brought under review, appears to be faulty. Thus, for example, it opens with the subject of Irritation and Itching of the Anus, and it concludes with a very short chapter on Habitual Constipation. We do not by this mean to indicate what ought to have been their relative position, but bearing in mind the constitutional origin of the affections in the region of the rectum, and how intimately they are associated with, or induced by disorders of the chylopoietic system, we think that another order might have been very conveniently and profitably adopted. We know that among the multiplied causes of these morbid local conditions, there are none more universally present and at work, than excitement of the digestive organs and constipation, and this, apart altogether from the question whether they constitute the primary cause, or form only a secondary and aggravating element in the case, complicating its features, giving intensity to the sufferings of the patient, and protracting the cure. The presence of hard irritating fæces in the lower bowel may be the occasion of producing, either directly or indirectly, about one half, and certainly some of the most important diseases referred to in Mr. Ashton's volume: for example, prolapsus of the rectum, and its occasional concomitant inflammation of the mucous membrane, and ulceration of the sphicter ani: also, piles, internal and external; and a whole host of intolerable morbid *et ceteras* generated by them. Mr. Ashton himself furnishes a case which might have been the natural consequence of constipation—probably nothing else. A gentleman stout with the muscular system well developed, is introduced to Mr. A. as an unhappy sufferer of years standing.

The mischief is in his anus: on examination it is found to be encircled with condylomata, the skin all round inflamed and cracked and bedewed with a serous excretion. Then comes the history of the case. The party is a clergyman, sedentary in his habits of course, and for many years the subject of piles; they subside, the loose folds of skin however remain, and take on an unhealthy action, the result of all which is—three condylomata, an indurated anal margin, and an itching, painful, next to intolerable life. Now Mr. A. is in nowise backward to recognize in its length and breadth all the meaning and all the mischief wrapped up in these said condylomata. He is not so engrossed with the anus as to forget the liver, nor with the bistoury as to lose sight of blue pill and ipecacuanha, cinchona and a saline. But then, if this be so, what is the matter with Mr. Ashton and diseases of the Rectum, and wherein are we at issue with him? Just herein, he does not sufficiently build up his subject, nor does he so arrange his materials and gather them up as to present to his readers the intimate and necessary relation which exists between cause and effect, and this very defect, if not present to his mind, has certainly been present with his pen, increasing his labor and adding to the letter press, which of course is a consideration to the purchaser, especially if taken in connection with the cream-laid paper aforesaid. In other words Mr. A. is rather given to repeat himself, which, under the circumstances while it can scarcely be called a vice, cannot with any propriety be spoken of as a virtue. We might quote several examples of what we mean, but this is unnecessary, as the reader will encounter them for himself as he travels through the book. This repeating is, we imagine, Mr. Ashton's mode of enforcing the features of the case and the facts of his practice. All that we say is, the mode is objectionable, and that had he made use of a little more system, it would have been more profitable, not to say more economical. But enough of this.

A very large part of the volume is taken up with the consideration of hæmorrhoidal affections: and when we bear in mind their prevalence, their complications and concomitants, their local effects and their effects on the constitution, it will not be considered that he has enlarged unnecessarily. Remembering, however, how exhaustive our author intended this part of his work to be, it is to be feared that he has not given sufficient prominence to all the circumstances.

Thus, for example, the influence of climate receives only the most passing allusion. He disposes of it in the following few words:—

"Warm, moist, and miasmatous climates dispose to hæmorrhage affections by inducing general relaxation, and of the venous system in particular: they also favor congestion of the abdominal viscera and develop the bilious, sanguineo-bilious, and melancholic temperaments. Those who have resided for some time in the East and West Indies are very prone to suffer from hæmorrhage.

This, so far as it goes, is unexceptionable, and considered simply as a mere observation of fact, it is possibly enough. But in as much as it makes no provision for the peculiar management of such cases, recognising nothing more than a greater proneness to these affections, without bearing in mind that the same circumstances which favor congestion in one part of the abdominal viscera tend more or less to induce it in others, it is evident that for practical purposes Mr. Ashton's allusion is not of much intrinsic value, at any rate to those who have to deal with constitutions tropically degenerated, as well as bodies topically diseased. Where such complications exist, as they most frequently do in this country, the difficulty of management becomes most materially enhanced, and the mode of procedure demanded frequently of a very different nature from that which would have been pursued, had the practitioner only been dealing with a simple case on its own individual merits. Both the mechanical and pathological impediments to the return of blood from the lower part of the pelvis are more serious and occur more frequently here than in temperate climates; but this very fact, while it confers a more serious complexion on the case itself, renders it altogether a question whether the minor and secondary evil ought to be interfered with, except mediately, *i. e.* through those organs which were primarily and principally at fault. Mr. A. when speaking of treatment points out very distinctly that there are circumstances where local surgical action is manifestly contraindicated, but we believe he would have done well, had he, when referring to the bearings of climatic peculiarities, on the hæmorrhoidal vessels, ascended a few links in the chain of causes, and measured more fully the evil influences of important vital organs in a state of disease. He supposes a case of difficult diagnosis. The question is piles, or no piles. There is hæmorrhage per anum—what is its source? The answer to which is, that if it is hæmorrhoidal and not in-

testinal, the constitutional disturbance will be comparatively trifling, but the passing of the blood will be more distressing, it will be florid and fluid, and lastly, the tumours or varicose state of the vessels will be detected by digital examination. This is apparently a very simple and perhaps a very satisfactory way of deciding the question generally, although it is just possible that in every instance it would not be sufficient. Intestinal hæmorrhage, for example, is not always attended with greater constitutional disturbance than when it proceeds from piles. It is not uncommon for very considerable hæmorrhage to take place from the bowel without organic visceral disease being present to account for it. Exhalation of blood from the mucous membrane is by no means rare, at any rate it occurs often enough in this country, indicating not so much a fault in the vessels, as a degenerate condition of the blood itself, and specially of the blood corpuscles. This elimination of the vital fluid is not dependant on any rupture of the walls of the intestinal capillaries, but implies that the blood corpuscles have been more or less destroyed so as to admit of their being transuded through the coats of the vessels. Bichat's experiments sufficiently proved that hæmorrhage could take place in this way, and subsequent pathologists have confirmed his observations. Now, in connection with this, we have the following remarks to make.

1st. That in this country while congestion of the abdominal viscera is a frequent occurrence, there is a tendency also to degeneration of the blood corpuscles, and that this combination is a source of intestinal hæmorrhage.

2nd. That this hæmorrhage is not necessarily accompanied or preceded by graver constitutional symptoms than those which are associated with loss of blood from hæmorrhoids; on the other hand the symptoms of both are in many respects closely allied, there being common to them a sense of weight and warmth, fulness and oppression, all of which are relieved when the discharge takes place.

3rd. That Mr. Ashton in speaking of intestinal hæmorrage has not had this form of it before his mind, otherwise he would have added another element to his diagnosis, viz., that this fluid is not so much blood as an excreted modification of it, not to be discerned by the naked eye, but susceptible of being distinctly revealed by the microscope.

Lastly and mainly, Mr. Ashton seems to have lost sight altogether of the fact that intestinal and hæmorroidal bleed-

ing sometimes coexist in the same individual and at the same time, thereby not only complicating the diagnosis, but very materially affecting the treatment.

It may seem that we have laid too much stress on this matter,—we do not think so. It is quite possible to invest a pile with an importance which it does not deserve. We have known at least one instance in which a patient returned to England from this country, bleeding per anum, broken in strength, nervous and jactitating from the frequent losses which he had sustained; on examination a couple of excrescences were discovered, upon which the whole odium was immediately thrown. The question does not seem to have suggested itself, that possibly the evil was more deeply rooted and the blood itself at fault, or that it might be escaping higher up and over a larger area. The piles in this case were ligatured, but the symptoms were aggravated, and a step taken *jugulare hominem.* We believe that too much care cannot be employed in investigating the state of the vital fluids before entertaining the idea of performing the very simple operation of tying a hæmorrhoid. Mr. Ashton quotes the opinion of Sir B. Brodie, which is suggestive enough. It is adduced by our author as evidence in favor of the ligature as a safe operative procedure.

"After having testified in its favor, Dr. Bright added that he had lost three patients after the operation, but *two of them had albuminuria* and occurred before he had become acquainted with the pathology and important alterations in the structure of the kidneys inducing that state of the urine which the valuable researches of Dr. Bright and subsequent investigators have since then so ably and so clearly demonstrated."

In the third case the constitution was broken down, and the operation was performed under the protest of the surgeon. But, apart altogether from the state of the kidneys, we believe that in every instance where there is the slightest doubt, and especially in all old Indians who have returned to Europe, no interference with knife, or ligature, or acid, ought to be thought of until a careful analysis of the blood has been made. A ready and very satisfactory mode of ascertaining the proportion of the red corpuscles was recommended by Dr. Theophilus Thompson, in a paper read by him before the Royal Society two years ago. The importance of all this may not come home with the same force to other minds as it does to ours; but we believe that the more closely we invest igate the subject, its proportions will assume greater

and greater magnitude. There is, we imagine, not a practitioner who has not had cases of inveterate anæmia, terminating in dropsy and death, which have baffled all his efforts and set at nought all his therapeutics. But what connection, it may be asked, have such cases with the one in point? Just this, there is in both the same pathological peculiarity and poverty of the blood only in an aggravated condition, especially *quoad* the red corpuscles, and the man is as truly bleeding to death by parting with the serum into his cellular tissue, as the other who sweated out his blood, partially decomposed, through the mucous membrane of his abdominal viscera. In both instances the only chance for the patient is steady and enduring effort to raise the character of the vital fluids, and to give energy to the weakened vital forces, any other course is neither more nor less than signing and sealing the man's death warrant. With reference to the treatment recommended by Mr. Ashton much need not be said. It is eminently judicious and such as will generally recommend itself to the profession. His remarks on Excision are sound and to the point. Perhaps he has enlarged somewhat unnecessarily and pointed out its dangers too much in detail, especially as in these days the operation is had recourse to much less frequently and with more discrimination than formerly. But perhaps he is right in so doing, there are some men who will work with edged weapons in spite of reason, and utterly oblivious of results. To such Mr. Ashton's remarks may, with all propriety, be recommended, they ought to be useful, but the possibility of their being benefited is highly problematical.

Nitric acid does not receive from Mr. Ashton all the attention it deserves. Mr. Houston, who introduced and advocated its use 18 years ago, in the pages of the "Dublin Quarterly," is acknowledged, but neither so fully nor so heartily as his valuable papers demand. They are important not only as advocating a new and successful method of dealing with hæmorrhoids, but as abounding in graphic description of the morbid changes which take place from mere relaxation of the mucous membrane onwards. Mr. Henry Smith's admirable little work on Hæmorrhoids and Prolapsus of the Rectum, is not as far as we can observe, alluded to in the present work at all. The application of nitric acid in *prolapsus recti* receives only a passing remark: he speaks well of it and mentions its having been recommended by Sir B. Brodie; but not a word is said of its

modus operandi. If the treatment possesses any value, it is surely worthy of discussion, and its physiological and surgical merits ought to be fairly brought forward.

It is impossible after the space which we have occupied already, to enter upon the other topics discussed in this work, nor is it necessary that we should do so; so far as we can see Mr. Ashton for the most part describes clearly and well what has been described clearly and well elsewhere. As we commenced our remarks with an allusion to his last chapter, we shall now shake hands with him over it. It is or it ought to be the most valuable in the book. As we have said, nearly all the miseries of the rectum cluster round constipation, and our only regret is that he has disposed of it so easily and so summarily. The obstinate constipation of females is not at all referred to, while it is notorious that they are the most painful sufferers in this respect, and occasion in many instances a vast amount of anxiety to those who have them under charge. In ordinary circumstances the same rules and the same treatment may be applicable to both cases, but of course there are conditions when they must be peculiar. We hope that in the next edition Mr. Ashton will add considerably to this chapter; by doing so, we believe he will increase the practical value of his important work.

The Medical Vocabulary, containing a concise Explanation of the Terms used in Medicine and its accessory Sciences. By ROBERT FOWLER, M.D., Edinburgh, District Medical Officer of the East London Union; Member of the Council of the Hunterian Society; Associate of King's College, London; Formerly House Surgeon of the Loughborough Infirmary. London: HENRY RENSHAW, 356. Strand, 1860. Sm. 8vo. pp. 366.

THIS unpretending little book forms one of the admirable series of Medical works issued by Mr. Renshaw under the title of "*Manuals*," and is a suitable addition to its predecessors in the series.

It is intended literally as a Manual, and for this its small size and trifling cost (3½ Rupees) are equally appropriate.

Before, however, noticing in detail the manner in which the work is presented to us, we may consider the grounds upon which the author has deemed it advisable to justify

this "addition to the many Medical Dictionaries still extant," which might seem, "at first sight, a superfluity, and speaking technically, a non-essential."

The author says—

"The increasing requirements, however, of the several Examining Medical Boards, alike with the no less extending dependence of a scientific knowledge, and a rational practice, of the Profession on its so-called Collateral Sciences, necessitate, on the part both of the Student, and of the Practitioner, in Medicine, an intimate acquaintance with the Scientific Terminology of the day.

The various sub-divisions of Natural History and of Natural Philosophy teem with a nomenclature, which appears to have received but a partial and transient acknowledgment in the Medical Dictionaries most commonly in use. To meet this deficiency (a deficiency of increasing importance) is the chief aim of "The Medical Vocabulary."

To the foregoing we might add that in the present day there is a great (and, we think, somewhat objectionable) tendency, on the part of authors, towards a multiplication of technicalities (in the discussion of ordinary subjects) which demands some such aid as the work before us for its mitigation.

The volume before us is essentially a student's book, and it is as such that we desire to commend it, as, in some respects specially, suited to persons not possessing the advantage of classical information, or an extensive acquaintance with the nomenclature of the sciences accessory to medicine.

On the latter point we may say that the volume before us is sufficiently comprehensive; and on the former care has been taken, by the author, to place the Greek, French, or Latin sources of derivation *in the Roman character*, with the requisite prefix, showing the language from which the various words have been taken. This we cannot help regarding as a very decided improvement upon the plan adopted in the more expensive works of Mayne, Hoblyn, &c., and we would suggest that perhaps it would be well in all such dictionaries not only that the sources of modern terms should be printed in their own proper character, but that also the correct pronunciation of these should be appended *in English letters.*

That the author has spared himself no labour in the collection of materials for his work can scarcely be denied, when we find that in 366 pages he has offered explanations for upwards of 10,000 words. We would gladly congratulate

him if we could, on a corresponding amount of judgment in the selection of his subjects or his treatment of them; but a very cursory glance at his work convinces us that it has been compiled with a very considerable want of this attribute.

Notwithstanding a professed intention *(Preface)* "to ex- "punge all such phrases and words—coined by the fore- "fathers of the profession—as appear to have become obso- "lete and disused, and not to have been recognised by the "Medical Literature of the present century," we find that Dr. Fowler has introduced into this vocabulary a number of terms not only seldom used, but in many instance, unprofessional. To the latter class may belong such words as *embowelling, hang-nail, knifesman, slavering, snaggle-teeth, wind—dropsy, &c., &c.*

We reprint one page of the book. To illustrate the author's treatment of his various subjects.

KETTLE-BOILING, or KETTLESINGING SOUND. One of the thoracic sounds heard at the commencement of phthisis, and probably owing to slight pressure on the veins of the lung producing oscillations of the blood and vessels.—*Dr. Scott Alison.*

KEY (Sax., *cæg*). An instrument used in drawing teeth.

KIDNEY (Ang. Sax., *cynne*, genitals; and *neah;* or Sw. Goth., *quid*, belly; and *nigh*). Two abdominal organs shaped like a kidney-bean, which secrete the urine.

KIDNEY, BRIGHT'S DISEASE OF (first described by Dr. Bright). A granular disease of the cortical portion of the kidney.

KI'ESTEINE (Gr. *kuō*, I am pregnant; *esthēs*, pellicle.) A white, flaky, pulverulent, grumous, organic deposit, ultimately collecting into a pellicle, observed under certain conditions, more especially those of pregnancy, in the urine.

KILOGRAMME (Gr. *chilioi*, thousand; *grammē*, gramme). A French weight equal to 2·6803 lbs. Troy, or 2·2055 lbs. Avoirdupois.

KILO-LITRE (Gr. *chilioi*, thousand; *litra*, litre). A French measure equal to 220·09668 gallons.

KINEMAT'ICS. Etym. as, and Syn. of, Kinetics.

KINESIP'ATHY (Gr. *kinēsis*, motion; *pathos*, affection). A mode of treating disease by appropriate gymnastics, or movements.

KINETIC (Gr. *kineō*, I put in motion). Syn. of Motory. Subs. pl., that part of the science of Mechanics, which treats of motion without reference to the forces producing it.

KINGDOM (*King;* and *dom*, jurisdiction). In Nat. Hist., A principal division of nature.

KING'S EVIL. Popular syn. of Scrofula.

KI'OTOME (Gr. *kiōn*, pillar; *temnō*, I cut in two.) An instrument for dividing any accidental filaments or adhesions in the rectum or bladder, and for excising the tonsils.—*Desault.*

KIRSCHWASSER (Ger. "cherrywater"). A spirit distilled from the Malacheb cherry, in Switzerland.

KLEPTOMA'NIA (Gr. *kleptō*, I steal; *mania*, madness). Insanity, with an irresistible propensity to theft.

KNEADING. A process consisting in pressing alternately upon a part of the body, to stimulate the muscles to more energetic action.

KNEED. In Bot., Syn. of Geniculate (1).

KNEE-PAN. Popular syn. of Patella.

KNIFESMAN. One addicted to operate in almost all cases.

KNOCK-KNEED. Affected with bending of the knees inwards, or Entogonyancon.

KNOTTED. In Geol., Characterized by having small detached points, which form knots in relief on the surface.

KOINO-MIAS'MATA (Gr. *koinos*, common; *miasma*, pollution.) Syn. of Miasma.—*E. Miller.*

KOLPORRAPHY (Gr. *kolpos*, bosom; *raphē*, seam). Syn. of Elytrorraphy.

KOPROLOG'ICAL (Gr. *kopros*, dung; *logos*, speech). Pertaining to the doctrine of the malefic effects of human dejections, vegetable and animal garbage, and offal of all kinds.—*Lyons.*

KOPROLOGITES (Gr. *kopros*, dung; *logō*, I collect). Applied to the large, covered, double-bottomed iron barges, into which the sewage of a large town would flow, and be carried away, according to the scheme which Mr. David Napier, of Worcester, suggests for removing the filth of rivers.

KOUSSINE. The alkaloid of the Kousso.

The want of care in the selection of the terms to be explained, has eventuated in the introduction of a number of words of little or no value to the student; and has been accompanied by a very great want of accuracy in definition of medical and surgical terms—whether these were intended to be actual or differential. Thus we read—(pp. 22—23.)

ANEURISM (Gr. *aneurunō*, I make wide). A preternatural dilatation or rupture of the coats of an artery; a dilatation of the walls of the heart.

By Anastomosis. A pulsatory nævus.

Diffused. Where after a wound of the walls of the artery, the blood escapes into the surrounding areolar tissue.

Dissecting. When owing to ulceration of the inner coats, the blood makes its way between these and the outer tunic of the artery.

External. Situate exterior to the cavities of the body.

False or *Traumatic.* Where after a wound of the walls of the artery, the adhesive lymph poured out becomes dilated into a sac.

Internal. Situate within the cavities of the body.

Of the heart. Hypertrophy, with dilatation (active) or dilatation with attenuation (passive) of the muscular walls of the heart.

True or *Spontaneous.* Where the sac is formed by one or more of the proper tunics.

The explanations here given for *true aneurism* and *false aneurism* are incorrect, and those for *active* and *passive aneurism of the heart* are not properly worded : or at least they are not set down so as to fix themselves on a student's memory as they should do.

It is in no spirit of unkindness that we write, but rather with a wish to guide our readers in the selection of works for their own use or for that of the students in our colleges ; and for either of these purposes, a cheap, portable, and sufficiently comprehensive vocabulary is not undesirable. But in such a work there is no need of such extracts from practical Anatomy, as those we note marginally, and which tend to conceal the fact that the term *angular* is applied to certain parts of the body—or of plants—*having an angular shape !*

AN'GULAR (L. *angulus*, an angle). Applied in Anat., 1. to the two serrated processes of the supra-orbital arch of the frontal bone; 2. the terminal twigs of the facial artery and vein which pass by the inner angle of the eye ; 3. these vessels themselves, which pass under the angle of the jaw ; 4. the twigs of the infra-orbital branches of the facial nerve, which pass upwards to the inner angle of the eye. In Bot., to stems, leaves, petioles, &c., of an angular shape. (p. 24.)

If the work under review is to be extensively used by students, it must be made sufficiently professional to be of use, and sufficiently plain in its explanations to fulfil the object for which it is written. For those more advanced in their studies, reference to other and more comprehensive works becomes necessary.

That the author has searched carefully for matter for his pages the following quotation will show :—

ARCHENCEPHALA (Gr. *archē*, dominion ; *kephalē*, head.) The name proposed by Prof. Owen for his fourth distinct sub-class of the mammalia, of which he regards the genus Homo to be the sole representative. This sub-class is distinguished by the highest state of development of the cerebral hemispheres, which not only overlap the olfactory lobes and cerebellum, but extend in advance of the one, and further back than the other ; by the possession of a third lobe to the cerebrum ; and by the existence of the posterior horn of the lateral ventricle and of the hippocampus minor. In this sub-class, the superficial grey matter of the cerebrum attains its maximum of extent ; and with this highest form of brain are associated peculiar mental powers. (p. 31.)

But, it may perhaps be questioned whether the information therein afforded is required in every elementary Dictionary. We think not.

If this work should pass into a Second Edition, we believe that attention to the points we have named would render it much better suited to the position it aspires to hold ; and it might be much decreased in size, and consequently in cost.

But notwithstanding the faults to which we have directed attention, there are some points in this Vocabulary deserving of praise. The plan adopted in the derivation of words, the typography, size, and cost of the book are all in its favor: and very trifling care in the compilation of a 2nd edition would render it a useful book and well suited for students in the Indian Colleges, by whom constant references to some Dictionary of Medical terms are especially required.

1.—*The Anatomist: being a complete description of the Anatomy of the human body, intended for the use of Students preparing for Examination at the Royal Colleges of Surgeons and other Medical bodies.* By M. W. HILLES, formerly Lecturer on Anatomy and Physiology at the Westminster Hospital School of Medicine, &c. London: HENRY RENSHAW, 356, Strand. 32mo. 1860.

2.—*Regional Anatomy: containing a description of the most important regions of the human body; with the relative Anatomy of the parts contained therein, designed as a guide in the performance of the principal operations in Surgery.* By M. W. HILLES. 32mo. 1857.

3.—*The Essentials of Physiology.* By M. W. HILLES. 32mo. 1860.

WE have no predilection for publications which profess to be "royal roads" to science. But, although the size of these three little volumes might lead one, at first sight, to suppose that they would come under this category, yet a glance at the entire title of each will show that the author had a very legitimate object in view when he compiled them; and he himself, in a preface to the *Anatomist,* repudiates the idea of designing a "short road to knowledge."

The first two works may be looked upon in the light of remembrancers to those who have already acquired a thorough

knowledge of Anatomy. And when one considers how very readily the details of this science slip from the memory of those who are actively engaged in pursuits which do not necessarily require the minutiæ to be constantly present to the mind, the possession of such concise little treatises must certainly be of value. We need only say of these Anatomical books, that, from the examination we have made of their contents, we feel sure that the information is most accurate and reliable, and that Mr. Hilles has performed his task of condensation in a very efficient manner.

"The Essentials of Physiology," a 32mo. of 318 closely printed pages, is exactly what its title states it to be. The author acknowledges that he is especially indebted to Valentin's work on Physiology (we presume he used Brinton's translation), and he certainly could not have chosen a sounder guide. There is no omission, that we can discover, of any important particular. The subject is divested of a considerable portion of the bulk of its literature by the omission of details of experiments, the deductions from which are given in the text. The chapter on the Blood is probably the most meagre in the book, and the subject might advantageously have been a little more fully dilated on. There is no notice of Dr. W. B. Richardson's recent researches into the causes of coagulation, and probably the author is justified in omitting any particular reference thereto, as he may be one of those who consider that Dr. Richardson's views may require some modification before they can be placed among the incontrovertible facts of physiology. In other respects the work has been brought down to the present state of knowledge; as an instance of which we may mention that Dr. Brown-Séquard's important conclusions concerning the functions of the spinal nerves are concisely given. This is perhaps a more pretentious volume than the other two, for it is not intended as a mere remembrancer, but rather as an introduction to, or epitome of, the science of physiology, affording to those who have no time for fuller investigation a condensed view of the essential matter contained in the various elaborate treatises which we possess on the subject; whilst, at the same time, it will afford a previous general insight into the science, which will be of advantage to those who have the time and inclination to peruse the more extended and very valuable works on Physiology which are within their reach.

We should not be at all surprised if the Professors of

Anatomy and Physiology in our Indian Medical Colleges should ultimately find that these little volumes are all that they require as text books for their classes. Certainly such appears to us is the case with reference to the Junior Department of the Madras Medical College. Even should the first two works not be considered as quite adapted for text-books, the same cannot be said of the "Essentials of Physiology." In institutions where the circumstances of the pupils preclude them from purchasing expensive works, these little books will be found quite within their means, as the two former are published at half-a-crown each, and the latter at three shillings and six pence. To those who have not to learn, but simply to refresh their memories upon, Anatomy and Physiology, we may say that the pocket size of these volumes renders them especially adapted for the travelling gharree or palanquin.

A Treatise on Syphilis in New-born Children and Infants at the Breast. By P. Diday, Surgeon to the Hospital de l'antiquaille, Lyons. Translated by G. Whitley, M.D., The New Sydenham Society. London, 1859.

Many of our readers may remember that in the year 1843 an institution was established in London, under the title of *the Sydenham Society*, for the purpose of printing, and supplying to the subscribers new editions of old or scarce Medical works, and translations of foreign treatises, the publication of which would probably not be undertaken by any private bookseller, on account of the uncertainty of the sale being sufficient to cover the expenses. The Society existed for a few years, publishing many extremely valuable works and several very worthless ones. As examples of the former we may enumerate Hecker's History of the Epidemics of the Middle Ages; Louis on Phthisis; Hasse's Pathological Anatomy; Rokitansky's ditto; Simon's Animal Chemistry; Gulliver's Edition of Hewson's works; Unzer and Prochaska on the Nervous System; &c., &c.

After some time the members of the Society became dissatisfied with the labours of the Council. They accused the managers with expending too large a share of the funds in Editorial fees, and, consequently, too small a proportion in

printing and binding; and after a good deal of irritation on both sides, another illustration of the truth of the maxim "a house divided against itself cannot stand" was afforded, or the Society ceased to exist.

In 1858 it appeared to some of the leading London Phycians and Surgeons that it would be possible to re-institute a Society of the same kind, and that a Council might be found which would so conduct the Society's affairs as to preclude the possibility of any disaffection on the part of the members. Thus the New Sydenham Society sprung into existence. A President, Vice-Presidents, Council, Treasurer and Secretary were appointed, and with right good will the projectors set to work and succeeded in obtaining 1,820 subscribers for the year 1859. A Code of Laws was drawn up and adopted. The second law runs thus—

"The Society shall carry out its objects by a succession of publications, of which the following shall be the chief:—1. Translations of Foreign Works, Papers, and Essays of merit, to be reproduced as early as practicable after their original issue; 2. British Works, Papers, Lectures, &c., which, whilst of great value, have become from any cause difficult to be obtained, excluding those of living authors; 3. Annual volumes, consisting of Reports in Abstract of the progress of the different branches of Medical and Surgical Science throughout the year; 4. Dictionaries of Medical Bibliography and Biography. Those included under Nos. one and two shall be held to have the first claim on the attention of the Society, and the carrying out of those under three and four shall be considered dependant upon the amount of funds which may be placed at its disposal."

This announcement and the character of the works issued in 1859 soon brought so large an accession of members that it became necessary to issue a reprint of the first four volumes. A limited number of copies of these works are still available for issue to new members who may be desirous of obtaining the works published by the Society from its commencement. Some of the members manifested a great desire for the issue of an Atlas of Skin Diseases, and the Council entered into calculations as to the possibility of publishing copies of Hebra's life-size plates with the funds at their command. It was found that in order to do this and keep up, at the same time, a regular issue of not less than four volumes per annum, at least 3,000 members would be required. This number has now been so nearly obtained that the publication of the Atlas has been definitively determined on, three plates to be produced each year, and

the first fasciculus to form part of the issue for 1860. We have seen a specimen of these plates, a beautifully colored representation of some of the forms of Herpes ; and, judging from this, we can but conclude that the work will be a faithful portraiture of Skin Diseases.

The works at present published by the Society are as follows.

For the year 1859.

Vol. I.—Diday "On Syphilis in Infants and Children at the Breast."

Vol. II.—Gooch "On the most important Diseases of Women and Children," with other papers. Woodcuts. Prefatory Essay by Dr. Fergusson.

Vol. III.—Memoirs on Diphtheria. From various French sources.

Vol. IV.—Professor Shroeder Van der Kolk, "On the Spinal Cord," and "On the Medulla Oblongata," and "On the Proximate cause and rational treatment of Epilepsy." Numerous lithographs.

Vol. V.—Translations of the following Monographs: 1st, Kussmaul and Tenner's "Experimental Researches on the Effects of Loss of Blood in inducing Convulsions." 2nd, Wagner, "On the Resection of Bones and Joints." 3rd, Professor Graefe's three papers on Glaucoma, Iridectomy, &c., &c.

For the second year, 1860.

Vol. VI.—Clinical Memoirs on Abdominal Tumours and Intumesence. By Dr. Bright. Edited by Dr. Barlow. Numerous woodcuts.

Vol. VII.—A year-book for 1859.

Vol. VIII.—Frerich's Clinical account of Diseases of the Liver. Vol. I. with woodcuts. Translated by Dr. Murchison.

We believe that the next work issued will be the first fasciculus of the Atlas of Skin Diseases, and that it will be followed by Vogel and Neubauer "On the Examination of Urine."

We scarcely intended to give an outline of the origin and progress of the New Sydenham Society, but as we have proceeded thus far, we may here mention that Mr. W. N. Chipperfield, Acting Garrison Assistant Surgeon, Fort St. George, has been appointed Honorary Local Secretary for Madras, and that he is authorized to register subscribers' names and to receive their subscriptions. It is necessary to state that the stock on hand of the five books issued for the year 1859 is very limited, and that there is no probability

of any further reprint, so that early application is necessary in order to secure the possession of the Society's books from the commencement.

The work, the title of which is placed at the head of this article, is one of very great interest and merit. M. Diday has evidently diligently studied all that has ever been written upon the subject of Infantile Syphilis, and he places all the various opinions upon the subject before his readers in a very perspicuous manner. He gives his own views, where he has arrived at any definite conclusion, explicitly ; but not having any particular preconceived theory to support, he merely indicates which appears to him the more tenable of two opposite views, and leaves the matter to be cleared up by subsequent more accurate and conclusive observations. One cannot help being struck with the extreme cautiousness of M. Diday when he feels called upon to disagree with the conclusions of a previous writer.

Besides the actual merit of the subject matter of the book, there is the additional merit of an admirable arrangement. The work is divided into three parts ; I. Ætiology. II. Description of the Disease. In this part we have two chapters, one devoted to the detailed and diagnostic indication of each lesion ; and the other to the progress of the disease. III. Prognosis—Ætiological and Semeiological. IV. Medico-legal Bearings. V. Treatment—Preventive and Curative.

The space at our command will not permit of our entering upon any analysis of the contents of the work ; and any thing short of this would not be doing justice to M. Diday. Every section of the book has been most carefully considered, and it may be looked upon as perfectly exhaustive of the subject. We cordially recommend its perusal to all those who have an interest in the progress of medicine. And as there is no other translation in existence than that made for the New Sydenham Society by Dr. Whitley—which appears to be an admirable one—our recommendation resolves itself into an invitation to our readers to enrol themselves as members of this Society, a step on their parts which we hope and believe will not be regretted by them.

PART III.

MEDICAL MISCELLANY.

No. 9.—*Case of Perineal Rupture after first Labour; Operation performed nine months afterwards; Cure.* By THOMAS LOWE, Esq., Assistant Surgeon, Madras Sappers.

LACERATION of the perinæum, though frequently met with by obstetricians in England, is rarely found so far as my experience enables me to judge, among Europeans in India.

That European women in India are less liable to such a distressing accident than their sisters in England, may be owing to the great relaxation of their muscular and mucous tissues, induced by the intense heat of the climate and their necessarily sedentary habits of life.

We may reasonably suppose such an accident of more or less frequent occurrence among native women, when we bear in mind the fearful rudeness of the manipulations of their midwives in cases of parturition, necessitating manual interference.

Whether such instances of mismanagement are numerous or otherwise, we, who are not in charge of hospitals especially set apart for those suffering from the diseases and accidents of child-birth, can hardly be supposed to know; but when we remember that laceration of the perinæum is the frequent result of mismanaged labours, or the improper use of instruments, and that it may happen in despite of the most careful and judicious treatment, we may naturally conclude that native women frequently suffer in such a way from the rudeness and ignorance of their attendants.

That laceration of the perinæum will occur in the first labour of the young, and those advanced in life, under the most careful and judicious management, is a well-known fact; indeed such cases seldom terminate without a slight lesion of the superior margin, or its inner surface.

For the treatment of such cases, little more is necessary than to prevent the contact of the urine, by simple ointment spread upon lint, and in a few days after the wound heals up.

But where rupture extends beyond this into the body of the perinæum towards the margin of the sphincter ani, or even—as sometimes occurs—through this muscle itself and into the rectum, then we require for the efficient treatment

of the wound, a more heroic and certain method than we can ever expect to insure from simple apposition, ointments, lunar caustic, the actual cautery, and other therapeutic adjuncts, or we shall invariably find our efforts frustrated, while our patients continue to drag on a prolonged existence of mental and physical suffering : the inflammation, suppuration, and ulceration continuing—now and then somewhat better, and again worse.

Such was the usual state of poor women a few years ago, when, indeed, perineal rupture and its frequent concomitants, vesico and recto-vaginal fistulæ, were considered by the majority of practitioners almost incurable. Formerly such cases were treated, when discovered, by bandaging the legs together, applying simple ointment to the edges of the wound, the recumbent position, catheterization, *and laxatives*, to the end that union by the first intention might ensue: repeated and vexatious disappointment was too common a result ; the edges of the wound cicatrized and hardened, and they were repeatedly cauterized with nitrate of silver, potassa-fusa, mineral acids, and the actual cautery ; and when partial union had taken place, it was too often undone by the natural action of the perineal muscles, induced by unwise administration of laxatives and purgatives. A perfect and lasting cure was formerly a rare exception, while displacements of the uterus, bladder and rectum, and great constitutional derangement induced by the lesion, were the distressing maladies under which the sufferers laboured for years.

The distress even in the milder cases is usually very great, and since we have it in our power to relieve the sufferer by no very formidable operation, it behoves us to dispense the benefits of modern surgery whenever opportunity presents itself, with the full assurance that a result otherwise well-nigh unattainable will crown our efforts.

The following case is an instance of complete recovery from an extensive lesion of the perinæum, brought about by the operation and treatment recommended by I. Baker Brown, Esq., London, in his admirable monograph on this subject published in 1854, to whom our profession and the public are so much indebted for his lucid and able work, and his highly successful labours in this field of science.

CASE.

October 6th, 1858.—Mrs. H————, Æt. 22, of a bilious temperament and weakly constitution, gave birth to her first

child about eight months ago. The labour was natural and lasted about eight hours; towards the latter stage the expulsive pains were rapid and forcible. The placenta was expelled shortly after the birth of the child. Chloroform was administered during labour. Some hours after the birth she experienced a smarting pain in the lower part of the vulva. No especial notice was taken of this for many days, during which it appeared to increase in intensity.

She left her room twelve days after the labour; movement gave her great pain, and she was obliged to observe the recumbent position upon sofas for some time. She said "the parts always felt raw," and from the continued pain and irritation she was induced to seek a change of air.

She then consulted another medical man, and was under his treatment for upwards of four months, during which time she took tonics and had the raw surfaces cauterized with nitrate of silver many times, without, however, obtaining any benefit.

She returned home, and I was now consulted. From the history of the case, it was evident that there existed a rupture of the perinæum.

Present State.—She is nervous, and has lost a good deal of flesh; is troubled with frequent head-aches and much depression of spirits; does not sleep at night; bowels irregular; urine scanty; she also complains of a constant bearing down in the womb. On examination I found the perinæum ruptured in a direct line from the fourchette to the edge of the sphincter ani. The two edges of the wound were ragged and irritable, and showed no signs of cicatrization. In the anal angle, irritable ulceration was going on.

An operation was recommended, to which the patient gladly assented.

As her general health was much impaired, this was deferred for a few days, during which time she took a gentle laxative and a tonic in the shape of carbonate of ammonia and decoction of cinchona; and between the edges of the wound a little spermaceti ointment upon lint was daily inserted.

On the 16th October 1858, with the assistance of the late Dr. Forster, of Rajahmundry, I proceeded to operate.

Choloroform was administered and the patient then placed in the lithotomy position. I then pared the two edges of the wound from the fourchette to the sphincter ani with a sharp pair of curved scissors. When I had thoroughly renewed the denuded conditions of these ruptured parts,

I passed through the deep portions of the wounds three needles—each holding a fine silver ligature: by these I drew together the two sides, and then twisted their ends together. I then passed *four* fine silk ligatures through the superficial edges and included a quill in these ligatures on either side, and then drew the cut surfaces close together. I had now the satisfaction of seeing the two edges of the rupture in perfect apposition from the fourchette to the anus.

A small piece of lint smeared with spermaceti ointment was then applied; the legs were brought down and secured at the knees with a handkerchief; the patient was removed to her bed, and one grain of opium given. To take but little either of solids or liquids.

5. P. M.—She is calm and easy. Urine evacuated by a catheter. To take another grain of opium.

17*th.*—Has slept well, and had only slight pain. Catheter employed; lint and ointment reapplied.

To have chicken-tea and small quantities of barley-water.

5. P. M.—Same; urine drawn off. To take one grain of opium at bed time.

19*th.*—Union appears to be going on perfectly. *Removed deep sutures.* Catheter used twice daily. One grain of opium given daily at bed time. To take nourishing light diet. She has no inclination to evacuate the bowels.

25*th.*—Since last report she has been doing well. Catheter has been used daily, and she has continued the opiate at bed time.

Perfect union has taken place in the whole extent of the wound. The superficial sutures are removed to-day. Continue simple nourishing diet.

To have a warm water enema next morning, and to empty the bowels in the recumbent position.

26*th.*—Bowels easily moved. She feels very comfortable. No breach in perineal cicatrix. Spermaceti reapplied. Continue the opiate at bed time. To eat a little chicken and toast and tea; and to remain in bed.

30*th.*—Doing well in all respects save a slight acidity of stomach.

Omit the Opium
℞. Sodæ Carb. ʒ i.
Ammon. Carb. ℈ ii.
Acid. Hydrocyanic dil, *m.* xl.
Inf. Gentianæ ad ℥ x.

Two table spoonsful to be taken three times a day.

November 10*th.*—Is much improved in health. Has an excellent, sound perinæum. Is permitted to leave her room, but is to observe the recumbent position as much as possible.

20*th.*—She now says she is quite well and takes her exercise morning and evening.

The above case scarcely needs comment. There can be little doubt, I think, that this patient would have been a long sufferer under any of the old methods of treatment, whereas the performance of this nowise difficult operation cured her of one of the most loathsome maladies a woman can suffer from, in little less time than *five weeks.*

In contradistinction to the antique method of administrating laxatives and purgatives, we at once see the beneficial results of *constipating the bowels*, even for so long a period as eight, nine or ten days, by solid opium. The rationale of this is too obvious to dwell upon, at the same time it will be seen how potent an adjunct to the ulterior success of the operation such a therapeutic ally is, in our hands.

No. 10.—*Case of Hypertrophy with Dilatation and Disease of the Mitral and Aortic Valves of the Heart.* By John Shortt, Esq., M.D., Zillah Surgeon of Chingleput.

Chellen, Convicted Prisoner, Æt. 21. Caste Pariah, labourer, height 5 ft. 4½ in., weight 103 lbs, has a boyish appearance from not having any hair about his face, of rather a spare make of body.

Previous History.—The prisoner was brought down from Chittoor for trial here, and was sentenced, on conviction, to 14 years imprisonment with hard labour, on the 15th July, 1856. He first came under observation on the 17th August, 1857, complaining of fever, headache, and nausea; the heat of skin was preceded by shivering; and he had pain in the cardiac region; he has also suffered from acute pain in the left side of the chest, which came on generally when he was walking, and lasted a short time whilst he was taking that exercise. It subsequently became frequent, and was brought on by the slightest exertion. His general health notwithstanding this has continued good, till symptoms of œdema manifested themselves in his face; he also com-

plained of difficulty of breathing, much increased on exertion; and he has been the subject of long continued palpitations. We can trace no hereditary tendency. No rheumatic symptoms were suspected or complained of, and his health, prior to the appearance of the present symptoms, was on the whole very good; he attributes his disease to violent bodily exertion in the performance of his duties. On examination, has tumultuous action of the heart, accompanied by slight dyspnœa and cough; pulse quick and moderately full, tongue pale and flabby, skin warm, bowels torpid. He was taken off the sick list on the 24th March, and was readmitted in April, complaining of severe debility, headache, and giddiness, attended with fever. On the 3rd May, 1858, complained of hæmorrhage from the urethra, which was not noticed. On the 11th, complained of headache and giddiness, face bloated, and presenting an anæmic appearance. On the 9th August he was troubled with difficult breathing, and inability to lie down, in consequence of a sense of oppression in the chest; and on the 24th of the same month he was placed on the invalid list and excused all work, on account of hypertrophy and disease of the mitral valve of the heart. On the 12th June, 1859, he was again placed on the sick list, in consequence of severe palpitations with increase of the chest and heart symptoms. For nearly two years, he has been on the invalid list, leading a quiet and regular life. Of late has been suffering from a general tendency to dropsy with dyspnœa, and although these symptoms have been relieved by treatment, the feet still continue œdematous. He frequently complained of throbbing pains in the heart with strong and tumultuous action, which was visible to the bye-standers, accompanied with a *bruit de soufflet;* pulse irregular, general health much impaired, with loss of flesh and constipated bowels.

Present Condition.—*15th December*, 1860.—The patient continues on the invalid list. Since last report, he has been brought under observation from time to time. The patient has an anæmic appearance with face bloated, at first appearing as the result of an increase of flesh, but upon closer examination it is evidently of a puffy nature. He has that peculiar expression of countenance so well marked in cases of diseased heart, wherein the face is puffed, the cheeks swollen and œdematous, the lips livid, and the eyes blanched and bright. On placing the hand over the chest

and pressing upon the ribs, he complains of pain in the præcordial region, and soreness in the corresponding intercostal spaces, and epigastrium. The motion of the heart is very perceptible both to inspection and palpation, the left side of the chest is prominently pushed forward, his respiration laboured, 24 per minute, and his countenance betrays an anxious expression; the pulse is small during contraction, full and bounding during dilatation of the heart, tongue white, skin dry, urine free, bowels torpid.

Physical Signs.—The impulse of the heart is greatly increased in force and frequency, extending over a space of six square inches, visibly, and with force raising the hand when placed on it. A loud saw sound murmur is heard opposite the left margin of the sternum, between the 3rd and 4th ribs more distinct in its character, and accompanied by distinct purring tremor, the murmur being synchronous with both sounds of the heart. On percussion there is marked dulness over the whole of the left infra-clavicular, mammary, and infra-mammary regions, indicating the extent and situation of the heart from the 1st to the 7th rib. The jugular veins pulsate synchronously with the heart and radial pulse.

Influence on Respiration.—Slight dyspnœa, or shortness of breath, increased by exertion or mental emotion—on auscultation no respiratory murmur in the left mammary and axillary regions can be heard and there is corresponding dulness.

2*nd January,* 1861.—The patient was suddenly seized with a fit of syncope at 10 A. M., and expired within a few minutes.

Autopsy six hours after Death.—Body fairly nourished, face calm but puffy, chest irregular on its anterior surface, the left side a little more forward than the right. Head not examined.

On cutting through the skin a layer of $\frac{1}{4}$ of an inch of adipose tissue was found to exist.

On opening the thorax, by the removal of the sternum, the first thing that attracted attention was the increased size of the heart, and distension of the pericardium, it was found occupying the space between the 1st and 7th rib, the right auricle taking up its situation beyond the right margin of the sternum, and the heart filling up the three mediastina.

The pericardium contained about 3 oz. of a glairy fluid, and was found adherent, in a semicircular manner to the extent

of two inches, to the left ventricle, commencing half an inch above the apex. The heart with pericardium weighed 3 lbs. 6 oz. after removal. On opening the heart its walls were found much thickened, and both the ventricular cavities proportionately distended, requiring 3 oz. and 6 drachms of *unboiled rice* to fill each. The length of the heart from base to apex 7 inches, circumference 17 inches. The walls of the left ventricle measured from ¾ to 1 inch, and those of the right ⅜ of an inch in thickness. The right ventricle contained a large coagulum of fibrine (polypus), the cordæ tendineæ and columnæ carneæ were much thickened. The tricuspid valve was opaque, and slightly thickened, with puckering at its free margins. The mitral valve was greatly thickened, containing cartilaginous deposits on its free margin, whilst the auriculo-ventricular opening on that side gave a diameter of 2 inches, the orifice encircled with a cartilaginous ring, and yielding a hard and resistent feel to the finger. The right and left auricles were next examined, and were found to contain fibrinous clots (polypi) with increased development of the musculi pectinati. The heart was firm in substance and devoid of adipose tissue. The three semilunar valves were indurated with cartilaginous deposit at their aortic periphery.

The left lung was displaced by the heart being pressed up into the apex of the thoracic cavity, a very small portion of the free margin of the superior lobe being visible between the 1st and 2nd ribs.

The right lung had formed adhesions with the parietes of the chest both anteriorly and posteriorly, the division between the superior and middle lobes being destroyed by adhesions; and about 3 inches of the free margin of the middle lobe was also found adherent to the pericardium. Both lungs were of normal color and crepitant with hypostatic congestion posteriorly.

Abdomen.—Stomach full, and containing half digested congee. Liver large, congested, and of a dark color, lying across the vertebræ, and occupying a space between the 7th and 10th ribs. Glisson's capsule, and the sub-mucous tissue of the gall bladder densely infiltrated with serum. Gall bladder thickened and empty. Liver with gall bladder weighing 2 lb. 6 oz.

Spleen enlarged, congested, and of a very dark color, weighing 1 lb. Kidneys somewhat atrophied, and weighed 3 oz. each, the cortical portion wasted leaving but a very

light margin. The pelves were thickened and contained infiltration of fluid in their sub-mucous tissue.

The various portions of the intestines, and peritoneal surface, were congested.

Pelvis.—Bladder contained 3 oz. of natural colored urine and was otherwise healthy.

Remarks.—This case appears to me worthy of notice from its illustrating in a remarkable manner the origin and progress of the disease. It is a striking instance of the extent to which structural derangement of the heart may proceed in an individual previously disposed to cardiac disease. The immediate cause being violent bodily exertion, stimulating the heart in the first instance to functional, and subsequently to permanent structural disorganization. When the patient first came under observation, he was suffering from pericarditis, together with some hypertrophy, evidenced by the tumultuous action then present. Being relieved of the most urgent symptoms, he was returned to duty. On his readmissions subsequently, some indications of a disturbed circulation, with those of latent pericarditis were present, and in all probability, the adhesion of the pericardium noticed on the *post-mortem* examination had already taken place, and from the physical signs present, hypertrophy with disease of the mitral valve was diagnosed, for which he was made an invalid. In June 1859, he was again taken on the sick report, in consequence of severe palpitations, occasioned, no doubt, by the increased action of the heart, to overcome the resistance met with from disease of the mitral valve, as well as that caused by adhesion of the pericardium. The same cause, that had called into play increased action, favoured hypertrophy of the muscular tissue, and subsequentlydilatation of the cavity itself. The head and chest symptoms then present were the result of a disturbed circulation, and dropsy was caused by passive visceral congestions. The continued œdematous state of the feet is characteristic of sluggishness of the venous circulation, producing passive congestion of the extremities. The throbbing pain and tumultuous action of the heart, were the result of hypertrophy and dilatation, the bruit de soufflet indicating induration, or spasmodic action of the mitral valve. The irregularity of the pulse indicated a general disturbance of the circulation, impairing the patient's general health, while the passive congestion of the liver induced torpidity of the bowels. The symptoms indicated on the 15th December, 1860, may

be thus accounted for. The anæmic appearance is the result of the unnaturally thin quality, and deficient quantity of the blood, the tumefaction of the face being the result of infiltration afforded by a sluggish circulation, this being invariably pathognomonic of cardiac disease. The pain complained of at this period, in the præcordial region, corresponding intercostal spaces and epigastrium, may be the result of tumultuous action—then evidenced both to inspection and palpation—the same cause pushing forward the left side of the chest. The loud saw sound murmur heard over the 3rd and 4th ribs, towards the left side of the sternum, might have been caused by regurgitation of blood into the venous trunks, this accounting also for the jugulars pulsating synchronously with the pulse. The dulness evidenced on percussion, indicated the size and situation of the heart; the pressure excited by which over the left lung, together with the disturbance of circulation accounts for laboured respiration, and anxious expression of countenance. There was no doubt that there was passive congestion of the lung itself interfering with its normal condition. The death in this case was as sudden, as it had been unexpected at the time it occurred, and may be accounted for as being the result of syncope produced by the deteriorated quality of the blood, proving insufficient to give the required stimulus to the heart, and thereby suspending its action; the imperfect state of the mitral valve with the dilatation of the auriculo-ventricular opening favoured the fatal result, by producing collapse.

No. 11.—*Case of Tetanus; failure of Narcotics and Sedatives to alleviate: treatment by Stimulation; Recovery.* By James Donaldson, Esq., M.D., 46th Regt. N. I.

Tetanus is fortunately a rare disease as compared with many of the less formidable ills to which flesh is heir; and as our medical books and periodicals record but few cases of successful treatment where the disease has been *well marked*, every well authenticated instance of cure seems worthy of being brought before the notice of the Profession. My chief object, however, in offering the subjoined case for publication in the "Madras Quarterly;" and in wishing particularly to draw attention to that which I think is the main feature of interest in its history; is to point out the

success attending the tonic and stimulant plan of treatment where sedative medicines had failed, and to shew the hopeful prospect of such a line of practice, in what may be termed "asthenic tetanus," and doubtless also in tetanus attacking persons of irritable, nervous, and perhaps, also, of phlegmatic temperament. In speaking of the "irritable" temperament thus, I would wish it to be understood as signifying irritation resulting from weakness, as contradistinguished from the irritability arising in various unhealthy and abnormal states of constitution.

The plan might indeed be objected to in native hospitals where the use of wine is supposed to be seldom necessary; but such objection could only exist in India, and need scarcely be considered even here, when in connexion with so rarely occurring and generally fatal a malady. The treatment of the case in question extended over a period of above two months, and, if published in extenso, would occupy much valuable space. It will therefore be given as concisely as is consistent with the desire to shew the most prominent symptoms of the disease, and the details and principal varieties of practice pursued.

Private Soobaroydoo, 1st Extra Regiment, Æt. 22, service, one year—on detachment duty at Coconada—was admitted on the 16th November, 1858, into the Regimental Hospital, Samulcottah, suffering severely from tetanic spasms, arising in the muscles of the back, and extending to those of abdomen and lower limbs. Trismus was also present on admission, the muscles of the face and neck (especially those on the anterior aspect) being rigid and hard as a board. The jaw was not altogether "locked" as the tongue could be protruded nearly one inch.

The temperature of the surface of the body was nearly natural, perhaps slightly raised. Pulse rather full and quick. Bowels costive, urine turbid and scanty—alkaline. The patient, moderately stout in body, previously in good health, and, for a native, of rather excitable temperament, was on guard at Coconada, where there was no proper protection from exposure to heat by day and cold by night; and complained of having suffered from the cold there.* He

* The temperature at Coconada during the night at the season spoken of falls to 50° Faht. or even lower, and very heavy falls of dew, attended with thick fogs towards morning, are of frequent occurrence; while the thermometer during the afternoon in a well shaded verandah, reads as high as 80° to 84°.

gave a confused account of some slight wound or bruise sustained some days before, but no mark or bite or other injury was discoverable on his person. On the first appearance of the disease he was sent up in a dhooly to Samulcottah, after taking an opiate administered by the Apothecary at the Civil Dispensary. As the symptoms were distressing, and suffering severe, Laudanum, commencing with dose of 15 minims, and Tinct. Assafœtidæ, commencing with 10 minims, were given four times in the course of the afternoon; and,

℞. Tinct. Cannabis ℳ x. 4 tis horis. et.
Tinct. Opii. ℳ xlv. c̄.
Tinct. Assafœt. ℈ i. bis terve in die.

On 18*th*, bowels not having been moved, ℞. Ol. Ricini ʒ iss. Statim. et, continue medicine. The Tinct. Cannabis being gradually increased.

19*th*.—Oil not having operated; ℞. Ol. Ricini ʒ i.; Ol. Tiglii. gtt. ii.

20*th*.—Tried the relaxing and soothing powers of the hot bath in which the patient was comfortable for about an hour, but with only temporary good effect. Up to this date there was little change in the symptoms, the report being "the severity of the spasms rather increasing; these have diminished in the extensors of the back, and are most severe in the muscles of abdomen—the diaphragm is not much affected." Patient had little rest at night, and almost no sleep, notwithstanding the large doses of laudanum, gradually increased in quantity. The hot bath gave comforting relief, and was repeated almost daily. Chloroform also relieved, and the spasms, and rigidity of neck, somewhat relaxed under its use; but the relief was of short duration, and the disease seemed in no way checked in its progress.

23*rd*.—Bowels being confined since the purgative dose operated on 20th;

℞. Ol. Tiglii. gtt. ii.
Ol. Ricini ℥ ii.

24*th*.—Bowels not acted on, repeat the purgative (Ol. Tig. ad gtt. iii.), continue medicine, substituting Tinct. Valerian co. for Tinct. Assafœt.

25*th*.—Bowels still not opened, and patient is uneasy.

℞. Ol. Terebinth. ʒ ss.
Ol. Ricini ʒ i.
Aquæ Tepidæ Oi.
F. Enema.

This was ordered under the impression that worms were harbouring in the intestinal canal and causing reflex irritation. No worms were voided.

℞. Tinct. Opii.
Tinct. Assafœt. et.
Ol. Terebinth. partes equales.

F. Liniment "to be rubbed freely on the affected parts."

℞. Æther. Sulphuric 3 ss.
Tinct. Opii. 3 i. h. s. s.

This last was given late in the evening in the hope of inducing a little rest or sleep—and occasional draughts of Sulphuric Æther and Solution of Muriate of Morphia (āā 3 ss.) were also given. On 26th November the night draught was increased to Æther. Sulph. ℈ ii. Sol. Mur. Morph. 3 iss. Quiet and a couple of hours dozing were thus obtained.

29th.—To this date no improvement of any kind could be noticed in the patient's state; that he was no worse, and that the disease was apparently held in check by the various remedies used, was all that could be said: he could swallow, with difficulty, small quantities of liquid nourishment; he got a little sleep at times, and he was not much emaciated; but the spasms and rigidity of the various muscles affected were much the same as at the commencement of the illness. He had now taken a large quantity of Laudanum, Morphia, and Cannabis, besides other sedative antispasmodic medicines, with frequent draughts of Sulphuric Æther and Sol. Mur. Morph. As there seemed to be little hope of a favourable change, I now resolved to try the effect of stimulants regularly repeated; and, as I imagined there was a daily aggravation of the symptoms regularly recurring and lasting some hours, I added quinine to each dose. The periodic aggravation was, however, by no means well marked, and might have been owing to causes quite distinct from malarious exhalations; of which latter Cocanada, as well as Samulcottah, is very free at this season of the year.*

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* As I am only detailing a case of tetanus with the treatment successfully employed therein, and not writing an essay on the causes, pathology, and treatment of the malady; I have purposely abstained from adverting to systems of practice, of which I have no experience. The enormous and repeated bleedings, of the hopeful effects of which some continental writers speak, I cannot understand: with the exception of, perhaps, momentary relief in acute spinal meningitis, I should expect nothing but hopeless evil from their employment. I have not seen an account of any case treated by strychnia, but from all we know of the character of that

On the 29*th* November the Tinct. Opii. was reduced in dose to ℥. xx, combined with grs. iii. of Aloes, four times in the day, and then discontinued. The stimulant treatment was commenced by giving one ounce of sherry, with grs. ii. of quinine, three times this day; the wine being gradually increased according to its effects, until after six or eight days the patient was consuming about half to three quarters of a bottle of sherry or port daily—and this plan was continued without further change until the termination of the illness.

On 5*th December* the report says; "Improving slowly but steadily under the treatment commenced on 29th ultimo. The bowels are opened naturally and regularly. Pulse not strong, but good. Tongue clean. Urine is still rather muddy, of dirty brownish colour, and alkaline. Patient gets now some hours of refreshing sleep daily. Eats heartily; enjoys the wine, and *asks for more.* Tongue cannot be protruded farther than at first; but the muscles of the neck are less rigid. The muscles of the back are now free of the disease."

December 10*th.*—Rigidity of abdominal muscles much reduced. Patient continues to improve in all respects. Urine clearing!

20*th.*—Rigidity of all the muscles nearly gone, although a tendency to spasm is still evident.

27*th.*—Tongue clean; patient nearly well; all functions naturally performed.

A measure of wine to be given now twice a day only.

January 6*th.*—Very much improved in strength: is taking on flesh, and looks well and fat.

10*th.*—Free of all symptoms of the disease. Wine to be gradually discontinued.

Quinine omitted.

13*th.*—Continues well. Omit wine.

14*th.*—Discharged from hospital convalescent.

23*rd.*—Is quite well, not yet sent to duty in case of exposure to cold on early parade or night duty.

February 2*nd.*—Returned to his duty.

Remarks.—If Dr. Pidduck be correct in attributing idiopathic tetanus to spinal meningitis in certain cases, a prox-

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alkaloid, it ought to add fuel to the fire in tetanus. Aconitine is a scientific remedy, and may prove a powerful depressant of the abnormal action; but I should not administer it unless I could exercise a constant vigilance over its physiological effects—and I have not hitherto been able to procure this powerful poison in India.

imate cause, the existence of which seems highly probable; and, farther, in attributing this to checked perspiration, and consequent blood poisoning, aided by diseased state of the kidneys; the hot bath, in absence of hot air bath, Turkish baths, &c., would seem to afford a valuable adjuvant in relieving inflammation or congestion of the meninges; in exciting a free action of the skin; and relieving somewhat the overburdened kidneys, &c.; but the repeated baths, although always affording grateful relief to the most distressing symptoms, did not appear to produce any permanent relaxation of the spasmodic action, or subdue the force of the disease, until the nervous system was fairly coming under the influence of the alcoholic stimulus—counter-irritation to the back and along the spine, which, in this view of the pathology of tetanus, ought to, or might, be expected to constitute an important part of the treatment indicated, although used perseveringly, and also felt to be soothing by the patient, did not seem in any way to check the progress of the disease, though doubtless an efficient aid in the general management of the case. Cupping was not had recourse to; and I doubt if its employment would have been attended with any advantage. Not having had any opportunity of examining, *post-mortem*, the bodies of persons who have fallen victims to tetanus, I have no knowledge, personally, of the appearances presented by the coverings of the brain and cord; and in this case fortunately, I gained no accession of knowledge: might, not however, the fact of a large portion of the volume of blood being driven out and kept out of the affected muscles, and the usual restriction to the recumbent (supine) posture, account for the congestion observed in the vessels and membranes of the cord in *post-mortem* examinations? In conclusion, in adverting to the treatment of tetanus by "stimulation" as recorded above, and which I believe was the cause of the successful termination of the case, I am very far from bringing it forward as a "cure" for this formidable disease; or advocating its indiscriminate use in all cases. Where a manifest source of irritation exists, such must, if possible, be removed. If, in idiopathic forms of the complaint, a rapid, strong, full pulse co-exist with symptoms of determination to brain or spine, depletion, general or local, must with cautious hand be employed—and so, with regard to all probable or possible causes of nervous irritation; let that cause be diligently searched out and taken away. I do not even know for

certain but this plan may have been tried and found to fail ; but in the absence of any reliable information on the subject, I should use this remedy again, and recommend its careful trial, in all cases of tetanus where rigid spasm, or severe convulsions occur without any apparent exciting cause, in temperaments of the kind specified above, whether naturally weak, or from any temporary circumstances reduced below their normal strength. No one will suppose that alcohol is looked on as a "specific" in this intractable complaint, where so many or indeed all methods of treatment have more often failed than succeeded—nor is it indeed at all likely to bring about amelioration of the symptoms, where there is congestion or inflammation of the nervous sheaths—but, where irritation and plethora have been removed, and where no apparent existing cause can be discovered ; where, especially, depletive, sedative, and antispasmodic remedies have been tried in vain ; I would trust more to *nature, well supported by "stimulation"* (whether by exciting a critical discharge, or, by a gradual emunctory process,) to rise superior to and overcome the diseased action, than to any method of treatment yet devised.

No. 12.—*Remarks on a Case of Fungus Testis, successfully treated with Iodide of Potassium.* By W. J. VAN-SOMEREN, Esq., M.D., Surgeon 1st District, Presidency.

MEDICAL men are naturally indisposed to deviate from established courses of practice, which have not only originally received the sanction and support of leading members of the profession, but are invested by frequent trials with all the *prestige* of success. This hesitation about striking out into new paths must be considered as salutary, but still circumstances ever and anon occur, in which the practitioner is compelled to adopt a plan of treatment which he may regard without confidence, and perhaps with positive distrust. He has recourse to it in fact as a *pis aller*, simply because he is precluded from doing that, to which his knowledge and personal experience combine to render him most inclined. Not unfrequently, however, the experimenter *malgré lui* finds reason to congratulate himself as well as his patient, that he has been thus forced on a track untrodden, but by a few. The invalid recovers both speedily and perfectly, and

his medical attendant feels himself armed with a new and useful weapon against disease.

A few months ago the writer operated successfully, in the manner recommended by Mr. Syme, in a case of fungus testis. The scrotum, after its indurated margin round the excrescence had been pared, was dissected off the *Tunica vaginalis* to such an extent as allowed the approximation of the lips over the fungus, and their edges were retained in apposition by four or five metallic sutures. There were one or two circumstances which reduced the chances of success, and rendered the prognosis proportionately unfavourable, but the man completely recovered, and left hospital with both testicles effective. On conversing with Surgeon Major Blacklock about the particular features of this case, and the operative measures resorted to, he remarked that he never found it necessary to have recourse to the knife for the cure of *fungus of the testicle*, as the malady always yielded in his practice to the exhibition of Iodide of Potassium. The observation was a startling one, and received, it must be confessed, with a considerable amount of incredulity by those who heard it. A short time subsequently, however, a man named Andyuppen, about sixty years of age, presented himself at the Native Infirmary with a large fungus of the right testicle. A great part of the scrotum had sloughed away, and there remained too little to allow of its being brought over the relatively enormous and prominent fungus which existed. Mr. Syme's operation was therefore impracticable, and resort to the old and barbarous procedure of repeatedly shaving away the fungous mass as it protruded, until the whole testicle was thus removed, did not appear desirable. The only alternative then was to treat the case with Iodide of Potassium as recommended by Mr. Blacklock, and accordingly, first three, and then five grains of the salt were prescribed to be taken thrice daily. As the patient was old and feeble, and a copious sero-purulent discharge issued from the extensive raw surface of the excrescence, a solution of Sulphate of Zinc (gr. ii. to the ounce) was ordered as a local application, and the Tincture of the Muriate of Iron was given, in fifteen minim doses, after each meal. These means were adopted without any sanguine expectation that they would prove adequate to the cure of the case, but a very few days showed a marked diminution of the outgrowth. It continued to decrease, and at the same time to subside within the remaining portion of the scrotum, which gradually

enclosed it, though at the expense of the left side, on which the testicle was retracted, and drawn well up towards the external abdominal ring. Once embedded in its proper cavity, a very slight stimulation with Sulphate of Copper first, and Nitrate of Silver afterwards, served to compel cicatrization, and the patient left hospital with both *testes*. At his age they could not but be small, and probably inefficient as generative organs, but still there they were, and their presence is a circumstance worthy of notice in connection with the treatment employed.

It must be acknowledged that in this instance the remedial measures put in force were crowned with signal success, and also that they constitute a preferable method of treatment to the operation, which would have been performed had it been practicable. No one will question the soundness of the principle that the knife should never be used when it can be dispensed with, and the case of Andyuppen certainly favours the notion that Mr. Syme's excellent operation is not always and invariably a necessity.

Was all the benefit in the case under review referable to the use of Iodide of Potassium? Probably not. Something must be carried to the credit of the chalybeate course —the rest, comfort, and good diet—all which the man enjoyed in hospital, and without any one of which he was doubtless a great sufferer without the walls of the Infirmary. It should further be borne in mind that while the case is offered as a suggestive one, it is not put forward as conclusively probative of the value, in every instance of fungus testis, of the treatment pursued with this patient. Its success in this case, and Mr. Blacklock's experience to boot, encourage the exhibition of the Iodide of Potassium as a tentative measure in the first instance, in patients similarly advanced in years, but it must be still regarded as an open question if the drug should be used indiscriminately in all cases. Looking to its alleged specific action on the testes, it may do much more than it is intended to effect. Not only may the lymph effused interstitially in the substance of the affected gland be absorbed, but both testes may become small by degrees and lamentably less, until the crippled patient has to thank his medical attendant for literally nothing—a result which cannot fail to prove exceedingly irritating to a man in the prime of life, and is certain to overwhelm his doctor with discredit.

METEOROLOGICAL OBSERVATIONS *made at the Madras Observatory, during the month of January*, 1861.

	Barometer reduced to 32° Faht.		Thermometer corrected to the Kew Observatory's Standard.				Direction of the Wind.		Depth of	
	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	A.M. *h.m.* 9·41	P.M. *h.m.* 3·41	Maxm.	Minim.	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	Rain.	Evaporation.
	Ins.	Ins.	°	°	°	°			Ins.	Ins.
1st Tues..	30·124	30·015	78·3	78·3	79·7	69·1	E. N. E.	E. N. E.	.....	0·313
2nd Wed.	·104	·004	78·0	78·8	80·7	69·1	E.	E. N. E.	.....	·258
3rd Thurs.	·100	29·971	78·3	79·2	80·7	68·4	E.	E.	.....	·333
4th Fri...	·089	·964	77·6	78·4	79·5	66·5	E. N. E.	E. N. E.	.....	·325
5th Sat...	·047	·908	78·3	77·7	79·9	66·4	E.	N. E.	.....	·306
6th Sun...	·035	·98	77·3	78·6	80·4	67·0	N. E.	E. N. E.	.....	·348
7th Mon..	·028	·895	77·3	78·7	79·9	67·1	E.	N. E.	.....	·254
8th Tues..	·008	·887	78·4	79·4	81·4	68·0	E.	E. by N.	.....	·302
9th Wed..	·022	·919	79·3	80·4	82·6	68·9	E.	E. by N.	.....	·228
10th Thurs	·035	·932	78·5	79·7	81·6	68·0	E. by N.	E. N. E.	.....	·263
11th Fri....	·036	·933	80·5	80·6	82·3	70 6	E.	N.E.byE	.....	·270
12th Sat....	·049	·931	79 6	79·8	81·4	73·0	E. by N.	E.	.....	·285
13th Sun..	·067	·948	79·3	80·6	81·8	70·8	E.	E. by N.	.....	·304
14th Mon..	·042	·931	80·3	80·3	82·8	75·1	E.	E. N. E.	.....	·307
15th Tues..	·075	·968	80·8	80·4	82·5	75·2	N. E.	N. E.	.....	·337
16th Wed..	·079	·943	80·5	80·7	83·4	71·6	E. N. E.	N.E.byE.	.....	·312
17th Thurs.	·034	·873	78·2	80·9	82·7	69·2	N.	N. E.	.....	·343
18th Fri....	·024	·917	79·5	81·1	81·7	68·4	E. by N.	E. by N.	.....	·268
19th Sat....	·049	·922	79·0	81·1	82·1	68·2	E. by N.	E.	.....	·287
20th Sun..	·076	·931	76·5	81·3	82·2	67·6	N.	N. N. E.	.....	·297
21st Mon..	·028	·881	81·8	82·0	84·3	71·0	S. E.	E.	.....	·336
22nd Tues..	29·981	·821	83·0	83·2	84·4	72·2	S.	S.	.....	·339
23rd Wed..	·965	·865	81·5	82·6	84·7	73·0	S. W.	S.	.....	·351
24th Thurs.	30·004	·885	80·6	82·4	83·5	71·4	W.	S. W.	.....	·317
25th Fri....	·048	·910	81·1	82·2	83·6	71·7	E.	E.	.....	·346
26th Sat....	·035	·880	81·1	81·8	83·1	72·3	E.	E. N. E.	.....	·263
27th Sun...	29·991	·876	82·1	82·1	84·6	75·8	E.	E.	.....	·315
28th Mon...	·991	·839	80·5	81·5	83·3	70·0	N. E.	N.	.....	·326
29th Tues..	·955	·819	79·3	84·2	85·0	68·4	W.	E.	.....	·345
30th Wed..	·960	·837	79·5	81·7	83·7	68·1	W. by S.	E.	.....	·369
31st Thurs.	30·006	·866	80·3	81·9	83·7	68·8	N. by W.	S. E.	.....	·384

METEOROLOGICAL OBSERVATIONS *made at the Madras Observatory, during the month of February,* 1861.

	Barometer reduced to 32° Faht.		Thermometer corrected to the Kew Observatory's Standard.				Direction of the Wind.		Depth of	
	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	Maxm.	Minim.	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	Rain.	Evaporation.
	Ins.	Ins.	°	°	°	°			Ins.	Ins.
1st Fri.	30·017	29·891	81·3	82·3	83·4	69·2	N. E.	S. E.	.....	0·397
2nd Sat.	·026	·872	80·6	81·0	82·0	67·8	E.	E.	.....	·376
3rd Sun.	29·994	·855	77·1	80·9	81·3	66·1	N. E.	E.	.....	·395
4th Mon.	·981	·832	78·3	81·7	83·5	65·9	N. N. W.	S. S. E.	.....	·353
5th Tues.	·955	·798	78·6	83·3	83·9	65·4	S. W.	S. E.	.....	·378
6th Wed.	·935	·808	78·3	84·5	84·8	65·6	W.	S. E.	.....	·368
7th Thurs.	30·002	·867	77·8	85·1	86·7	66·2	W.	S.	.....	·379
8th Fri.	·023	·891	78·3	83·5	85·8	67·3	W.	E. by S.	.....	·328
9th Sat.	·016	·892	78·6	82·1	84·0	67·5	N. N. W.	S. S. E.	.....	·374
10th Sun.	·004	·891	78·1	82·5	84·0	66·3	N. N. W.	S. E.	.....	·347
11th Mon.	·023	·902	78·3	82·8	84·4	65·9	N. N. E.	S. S. E.	.....	·311
12th Tues.	·025	·904	78·4	81·6	82·9	65·0	N. E.	S. E.	.....	·370
13th Wed.	·046	·898	78·3	81·5	81·9	65·1	N.	S.	.....	·399
14th Thurs.	·042	·903	78·6	81·8	82·7	68·3	W.	E. S. E.	.....	·353
15th Fri.	·007	·858	77·5	80·7	81·8	64·3	S. E.	E. by S.	.....	·322
16th Sat.	29·997	·869	76·8	82·6	82·7	63·1	W.	E. S. E.	.....	·316
17th Sun.	30·002	·901	77·4	83·3	84·8	63·2	W.	S. E.	.....	·334
18th Mon.	·059	·940	80·0	82·4	83·3	67·0	S.	E. S. E.	.....	·337
19th Tues.	·112	·980	81·3	82·1	82·6	68·9	E.	E.	.....	·392
20th Wed.	·091	·938	81·5	82·1	83·9	70·1	N. E.	E. N. E.	.....	·416
21st Thurs	·074	·944	83·1	83·6	85·0	74·2	E.	N. E.	.....	·317
22nd Fri.	·082	·949	81·8	83·1	84·5	73·4	E.	E.	.....	·418
23rd Sat.	·074	·940	81·5	81·5	83·5	70·7	N. E.	N. E.	.....	·399
24th Sun.	·036	·919	80·3	82·3	83·2	68·8	E. N. E.	N. E.	.....	·395
25th Mon.	·006	·893	80·7	82·2	83·9	67·5	N. E.	E.	.....	·411
26th Tues.	29·991	·887	79·8	82·3	85·6	67·0	N. E.	E. N. E.	.....	·333
27th Wed.	30·020	·886	82·7	84·2	86·3	69·4	N. E.	E.	.....	·416
28th Thurs.	·020	·909	82·1	84·4	86·6	70·9	N.	E.	.....	·353

METEOROLOGICAL OBSERVATIONS *made at the Madras Observatory, during the month of March* 1861.

	Barometer reduced to 32° Faht.		Thermometer corrected to the Kew Observatory's Standard.				Direction of the Wind.		Depth of	
	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	Maxm.	Minim.	A. M. *h. m.* 9·41	P. M. *h. m.* 3·41	Rain.	Evaporation.
	Ins.	Ins.	°	°	°	°			Ins.	Ins.
1st Fri....	30·040	29·901	85·2	86·0	87·5	72·5	E.	S.	.....	0·346
2nd Sat...	·065	·916	84·8	86·1	87·4	72·2	S.	—	.....	·389
3rd Sun...	·004	·858	82·7	84·4	86·4	69·5	W.	S.	.....	·324
4th Mon..	29·967	·833	81·8	83·8	84·8	67·7	S. W.	S.	.....	·414
5th Tues..	·969	·843	83·1	84·9	85·6	69·9	S. S. W.	S.	.....	·442
6th Wed..	·957	·814	85·3	85·2	87·2	71·7	W. S. W.	S.	.....	·412
7th Thurs.	·944	·820	83·5	86·3	87·5	71·7	W. S. W.	S. S. E.	.....	·434
8th Fri....	·973	·850	86·1	85·5	86·7	72·0	S.	S. E.	.....	·378
9th Sat....	·975	·848	83·6	86·3	87·9	71·0	S.	S. by E.	.....	·412
10th Sun..	·961	·834	85·6	86·1	89·1	74·7	S.	S.	.....	·422
11th Mon..	·987	·859	85·8	86·7	89·6	75·4	S.	S. E.	.....	·330
12th Tues..	30·039	·892	81·8	84·0	85·8	78·8	E.	E.	.....	·191
13th Wed..	·050	·907	79·5	78·2	83·8	74·3	S.	N.E.by E.	0·130	·121
14th Thurs.	29·987	·842	82·3	84·7	86·5	71·3	N. E.	E.	.025	·360
15th Fri....	·926	·815	82·7	85·2	87·8	71·4	W. N.W.	S.E. by S.	.....	·302
16th Sat....	·936	·812	83·3	86·7	87·9	73·4	W. by N.	S. S. E.	.....	·317
17th Sun...	·949	·846	85·5	86·5	89·7	74·3	S. E.	S. S. E.	.....	·396
18th Mon..	·854	·728	87·1	88·5	89·4	75·9	S. by E.	S. by E.	.....	·362
19th Tues..	·918	·813	89·8	84·0	90·4	76·7	S.	S. S. W.	0.016	·226
20th Wed..	·913	·789	83·4	84·5	86·6	75·1	S. by W.	S.	·730	·058
21st Thurs.	·940	·803	84·6	85·0	87·9	73·1	S. S. W.	S. S. W.	·130	·251
22nd Fri....	·906	·779	85·9	87·3	94·2	73·6	S. W.	S. by W.	.....	·376
23rd Sat....	·900	·771	88·8	87·0	92·5	75·5	W.	S.	.....	·372
24th Sun...	·621	·776	89·8	90·3	91·9	75·5	S. W.	S. S. E.	.....	·486
25th Mon..	·927	·803	89·5	89·3	91·7	77·0	S.	S. by E.	.....	·442
26th Tues..	·973	·852	89·3	88·3	89·8	74·6	S.	S.	.....	·399
27th Wed..	·969	·843	88·5	87·8	89·5	74·2	W.	S. E.	.....	·351
28th Thurs	·958	·840	88·3	87·6	89·4	73·4	S. by E.	S.	.....	·334
29th Fri....	·975	·863	85·3	86·4	88·2	71·8	S.	S. by E.	.....	·338
30th Sat....	·998	·865	83·3	86·3	87·8	71·0	S.	S. by E.	.....	·289
31st Sun...	·649	·827	86·6	87·3	89·0	70·8	S.	S. by W.	.....	·365

PART IV.

MEDICAL INTELLIGENCE.

COMPETITIVE EXAMINATIONS FOR THE MEDICAL SERVICE. THE CASE OF DR. THOMPSON.

Colonel Sykes [Feb. 22] asked the Under-Secretary of State for War upon what grounds Dr. R. Thompson, M.D., who had satisfied the army medical director-general, Dr. Gibson, that he possessed the prescribed qualifications of a degree in medicine and a diploma in surgery to entitle him to be examined as a candidate for a Medical commission in her Majesty's service, and had been directed to attend on February 18 to undergo a competitive examination, was, on the morning of that day, in a personal interview, refused permission by Dr. Gibson to appear before the board of examiners. The hon. and gallant gentleman said that Dr. Thompson was born in India, was the son of a European pensioned there, but his mother had a tinge of native blood, though not half caste. Dr. Thompson was legitimate. He had studied medicine at the Medical College at Madras, and as he showed great talent and made much progress, it was thought desirable that he should visit England. He came to Europe and went to St. Andrew's, where he obtained a diploma as Doctor in Medicine, and he subsequently went to Edinburgh, and obtained a diploma to practice in surgery. Dr. Thompson afterwards desired to undergo a competitive examination, in order that he might obtain an appointment to the Government Medical service; but on making the necessary inquiries, he was informed by Dr. Gibson that he would not be permitted to do so, as the appointments to that service were no longer made for India exclusively, but for the service generally; that the gentlemen appointed might be sent to Canada and elsewhere, and as Dr. Thompson had some native blood in his veins, his constitution would not be strong enough for cold latitudes, and therefore it would be useless for him to undergo a competitive examination. Dr. Thompson complained of not being allowed to enter the list; and he said that the great expense to which he had been put to obtain a higher professional status would be thrown away. If the facts were as he had been informed, this gentleman of great capacity and professional attainments, and whose testimonials were perfect, had not met with that conduct which he was justly entitled to expect as a British subject. He trusted the hon. gentleman would be able to give him an answer which would be satisfactory.

Mr. T. G. Baring said the act of Parliament to which some reference had been made did not apply to this case. The gentleman to whom his hon. and gallant friend had referred, with one or two other gentlemen, came to this country for the purpose of competing

for appointments in the Indian Medical service, as those appointments were open to public competition. But as the native local army had ceased to exist under the act of last session, there would not be any more appointments in the Medical Indian service. That being so, these gentlemen were desirous of competing for appointments in the general Medical service. Then came the question whether gentlemen of native Indian parentage were fit persons to be admitted to that service. There was no other question whatever either as to ability or education. Under the present system, every medical officer might be called upon to serve in different parts of the world, and the constitution of a gentleman of native Indian parentage would probably not permit him to render efficient service in cold latitudes. There had been a correspondence between the Secretary of State for War and the Secretary for India, and it was determined that it would not be proper to appoint this gentleman to the service, because at a very early date he might become a charge upon the British public, and not able to fulfil his duties efficiently. He would add that the Secretary for India would reconsider this case, and deal with it in such a manner as would give satisfaction to Dr. Thompson, and at the same time not interfere with the interests of the general Medical service.

We make no apology for extracting the foregoing paragraph from the *Home News* of the 26th Feb., and submitting such comments upon it, as appear to us to be called for. Dr. Thompson, the individual alluded to by Col. Sykes, was, we believe, for some four or five years an Assistant Apothecary on the Madras Establishment. He served under various Medical Officers, and we believe we are correct in stating that he always acquitted himself to the satisfaction of his superiors. In the year 1859, he applied for a furlough to proceed to Europe, but from the short-handed state of the department, the indulgence sought for, could not be granted him. He then applied for permission to resign the service, on refunding to Government the amount of stipend drawn by him during the period he was a pupil in the Medical College. This request was complied with, and he resigned his place in the Subordinate Medical Establishment on the 28th Oct. 1859, with the view of proceeding to Europe to qualify for the higher grades of the Indian medical service. We mention these particulars to show, that in spite of many obstacles, Mr. Thompson's self-reliance was such as to induce him, in pursuit of the honorable object of his ambition, to undertake a long and expensive journey and subsequently to enter the competitive list, against men, whose general and professional advantages had been greatly superior to his own.

Mr. Thompson succeeded in obtaining a degree in medicine, and a license to practice surgery, and, we have not the slightest doubt, would have obtained a very respectable position in the list of Assistant Surgeons of H. M.'s service, had he been permitted to compete.

The explanation afforded by the Under-Secretary of State for War, convinces us that a great hardship and injustice has, in this instance, been committed. The act of Parliament of 1853, by which all natural born subjects of Her Majesty were declared to be eligible to compete for appointments in the Indian medical service, has never been repealed. Confiding in the stability of existing regulations, several persons from India have proceeded to England, with the view of obtaining appointments, and after much labor, anxiety, and expense (the latter in some cases so great as to entail a long course of debt for years to come on them and their relatives) they suddenly find that they are debarred from competition on what seems to be a mere quibble.

Mr. Baring and Dr. Gibson appear to think that no man with dark blood in his veins is, for physical reasons, a fit and proper candidate for H. M.'s Military service. Mr. Baring surely does not mean to imply that H. M.'s army is at the present moment quite free from the defect he makes so much of in the case of Dr. Thompson. We could adduce several instances of gentlemen who have served their Queen and country, honorably and with distinction, in all parts of the world, but whose ancestry as regards the admixture of Indian or African blood, would not bear the test here prescribed. It is notorious, moreover, that Eurasians of a certain descent are permitted to enlist into H. M.'s army as *Europeans*. On what ground then, has a rule been brought into operation, without a word of warning, and in the face of all existing regulations to exclude gentlemen of mixed descent from entering a branch of the public service which is confessedly open to competition to all of her H. M.'s subjects possessing the requisite moral and educational qualifications ?

As to the *health* objection we regard it as altogether untenable. Eurasians thrive, and do better on the hills of India than on the plains. Many reside in Europe and enjoy better health there than in tropical regions. We have no doubt they would do equally well in Canada, or any other of H. M.'s Colonies. It is a well known fact that escaped and liberated African slaves settle in Canada and thrive

there. If Africans can bear the rigour of a northern climate, why should Indo-Britons fall sick and become a burden to the State, from a tour of duty away from their own country? In the late China war, several East Indians of the Madras Establishment accompanied the army to Pekin, and did good service there in various capacities, but especially in the subordinate Medical department. From our personal knowledge of the men who served in the above campaign, we are inclined to the opinion that the cold bracing climate of the North of China acted beneficially upon their constitutions, and that they returned all the stronger and better for it.

Regarding the effect of the late arbitrary proceedings in Dr. Thompson's case, upon the cause of medical education in India we cordially endorse the views of an "Indian Civil Servant," as expressed in a letter to the *Times*' newspaper.

"If [this decision] be upheld, the right of admission to the Indian Medical service, which for many years has been conceded to the natives of India, will have been virtually abolished by the amalgamation of the two armies. This decision will cause great dissatisfaction in India, where it will seriously retard the progress of education, and will be ruinous to the prospects of many worthy young men who have been instructed in the Indian Medical schools, and have subsequently come to Europe to qualify themselves for competition at great expense and in defiance of the prejudices of their countrymen. The mode in which the amalgamation of the Royal and Indian Medical services is to be effected, the manner in which the numerous civil medical appointments now filled by the surgeons and assistant-surgeons of the local service are to be made, have not yet been notified; but surely an arrangement is possible which will preserve to our Indian fellow-subjects the field of employment which has hitherto been open to them through the liberality of the late East India Company. The exclusion of any class of her Majesty's subjects, on the plea of general constitutional unfitness by reason of their birth or descent, by any authority less than that of the Legislature, is, I apprehend, illegal, and I trust that the *Times* and the other organs of public opinion which profess liberal principles, will lend their powerful aid in advocating the just claims of men who have no personal influence with the governing powers in this country and are not directly represented in Parliament."

From the local papers we gather that a Hindu educated at the Madras Medical College has been similarly refused admission to the competitive examination, for assistant surgeons. The history of this gentleman's appearance in the

field of competition is curious and instructive. Dr. "Pulney Andy" was not long since a 2nd dresser in the Madras Subordinate Department. After a service of a few years in this capacity, he obtained leave to return to the Madras Medical College to study for the grade of native surgeon. In due course he appeared for his diploma, but failed at two successive annual examinations to satisfy his examiners that he was a fit and proper person to be admitted as a graduate of the College.

No wise daunted however, by these failures, he resigned his position in the Subordinate medical service and proceeded to Europe, *via* the West Indies, whither he went in medical charge of cooly emigrants. We next hear of him as a graduate of the University of St. Andrew's, and a member of the Royal College of Surgeons of England, and lastly as a candidate for an Assistant Surgeoncy in H. M.'s Army. No one, having a knowledge of the Hindu character, can but admire the perseverance and zeal with which Pulney Andy has overcome the obstacles in the path of his honorable ambition, and we most cordially wish him every success in his future career, whether that may be in the service of Government, or in private practice amongst his own countrymen. We cannot but think, however, that in his case, the authorities wisely decided in not allowing him to compete for a general service appointment. Had he been successful, he must as a matter of course had been attached to an European Regiment, and we are quite certain that no native physician, whatever his talents and accomplishments may be, could exercise that moral control over a number of ignorant, and often vicious and unruly Europeans, which is absolutely essential to the well being and descipline of a Regimental Hospital. His social peculiarities as a Hindoo of caste, would likewise interfere much with his usefulness amongst his brother officers, and render his position a very difficult and unpleasant one. In fact a native officer of Irregular Cavalry in command of a squadron of Dragoon Guards would not be more out of place than Dr. Pulney Andy as Medical Officer of a European Corps.

We have no doubt that Dr. Pulney Andy will in the end, congratulate himself on the decision of the home authorities in his case.

But with regard to Dr. Thompson no such objection can be adduced. According to Col. Sykes, he is entitled to be considered a European, and in a service where a certain pro-

portion of the officers consist of gentlemen who have "risen from the ranks," it will scarcely do to argue for the exclusion of East Indians on the ground of their social inferiority, and deficiency in moral courage, especially when we find so many examples in which these difficulties have been met with, and overcome.

THE PROFESSORSHIP OF MEDICAL JURISPRUDENCE IN THE MADRAS MEDICAL COLLEGE.

In the year 1857 the Madras Government decided on establishing a distinct chair in the Medical College, for the instruction of the pupils in Medical Jurisprudence. Dr. Urquhart, a private practitioner, and coroner for the city of Madras, was selected by Lord Harris to fill the appointment, and considering his immense practical experience in medico-legal investigations, we do not think that any better selection could have been made. Dr. Urquhart continued to fulfil the duties of his office until 1860, when he was compelled to proceed on sick leave to Europe. In consequence of certain changes in the course of instruction given to the senior pupils, the Professorship was, during his absence, temporarily held in abeyance. We observe from the local papers, that the Professorship has been altogether abolished from the 1st of March 1861, just as Dr. Urquhart was about to return to his duties, and the late Governor (the Hon. A. Morehead) has remarked as follows :—

"The Governor in Council is satisfied that the knowledge which the pupils now acquire from the Professor of Medical Jurisprudence can be equally well, if not better imparted, by the different Professors in their several departments. They will accordingly bear in mind that henceforward it will be imperative on them to teach those portions of Medical Jurisprudence specially belonging to their particular classes. The examination of students in this branch of study, however, will not take place until after the fifth year, so that in effect they will have five years to require that competent knowledge of the subject which is now compressed into one."

We cannot but look upon the decision of Government in this matter, as likely to have a prejudicial effect upon the cause of medical education in this Presidency. The measure is altogether a retrograde one, and we fervently hope that it may be, at no distant period, re-considered. The saving

to Government of 150 Rupees a month, in the educational department, is of course a serious matter in these hard times, but it may be a question whether the shears might not with more propriety, have been applied elsewhere in the same department, if all we have lately read regarding the laborious duties of Inspectors of Schools be true. So far as we can judge, the money might have been saved, temporarily at least, without sacrificing the Professorship. It appears that under the new arrangements there will be but few, if any pupils, in the class of Medical Jurisprudence for the next two years. There would have been no objection under such circumstances, to allowing the professorship to remain in abeyance until a class could be formed. Such an arrangement would probably have been satisfactory to the late Professor and to those who desire to see medical education in this Presidency, keeping pace with the times. As it is, the course of instruction communicated to the students in the Madras Medical College, can no longer qualify for admission to any of the examining boards in Great Britain and Ireland, as these require that Medical Jurisprudence shall be taught as a distinct subject, and that the Professor thereof, shall not instruct in any other branch of medical science. If we mistake not, the regulations of the University of Madras require a similar provision; and should this be the case, (we have not the regulations at hand to refer to) the students educated in the Medical College, will present the anomaly of being ineligible to compete for honors in their own University. We understand there are already some six or eight private students attending the College courses, it will be a serious matter for these young gentlemen, to find, after spending some years in the pursuit of medical knowledge, that their *Alma mater* is unrecognized by the various licensing bodies, because the course of instruction there afforded is incomplete. We understand that the Royal College of Surgeons of England, has intimated to the College authorities here, that in future certificates will not be received from any one lecturer, on two distinct branches of Medical Science. The allied subjects of Anatomy and Physiology, are not exempted. It is evident therefore that several alterations must be effected before the College courses can be made to meet the requirements of private students.

The coming amalgamation of the Medical departments, and reduction of Military establishments, will probably have

the effect of diminishing the number of pupils who will receive their education at the public expense. It is not improbable, moreover, that a considerable number of the civil medical appointments now held by commissioned officers, will in future be filled by duly qualified practitioners, unconnected with the army. Under these circumstances it appears to us, that every effort should be made to heighten the standard of Medical education in this Presidency, so as to permit those intending to compete for such appointments to qualify themselves for the degree of Doctor of Medicine now conferred at all the Indian Universities, or to meet the requirements of the British Examining Boards.

We need scarcely observe that we do not consider the abolition of the Professorship of a very important branch of Medical science, as calculated to effect this object, or to enhance the reputation of the College, which, under the present arrangement, must be content to occupy an inferior position, in comparison with similar institutions in Calcutta and Bombay.

The object in abolishing the Professorship, as stated in the Government order, is purely an economical one. There are so few pupils at present to be taught in the Senior Department, that their instruction in Medical Jurisprudence is not considered worth 150 Rupees per mensem.

We have before alluded to the fact that several private students are attending the College courses. These young men are all of respectable parentage, and could well afford to pay something like an equivalent for the education they receive—and bearing in mind the necessity for economy in public expenditure, we should be glad to hear that a proposition had been submitted to Government, with the view of putting an end to the system of gratuitously qualifying private individuals for entering upon the practice of a "learned and liberal" profession. We have reason to believe that the friends of the young gentlemen in question, would prefer paying moderate fees for permission to attend lectures and hospital practice, rather than that their sons should be educated at the expense of Government. We have lately heard of an instance in which a student declined to compete for a scholarship worth 20 rupees a month, on the ground that his friends were well able to support him, and that scholarships were only intended for those in less fortunate circumstances than himself. With

such facts before us, we can only conclude, that an attempt should be made to render the College, so far as private students are concerned, self supporting, and instead of diminishing the number of teachers, or subjects taught, we would recommend an increase in both, and trust to the increasing demand for sound Medical education, on the part of the community, and to the justly distinguished reputation of the College Professors, for a large addition to the class of private students, and ultimately a remunerative return for the trifling additional outlay required.

As the sole representative of the Medical Press in this Presidency, we have felt it our duty to notice this subject, and we respectfully commend it to the consideration of the Director of Public Instruction.

THE ROYAL WARRANT OF 1860, AND THE SECRETARY OF STATE'S INTERPRETATION OF "SERVICE IN INDIA."

No. 9 *of* 1861, *8th January.*—The following General Order by His Excellency the Governor General of India is puplished :—

GENERAL ORDER BY HIS EXCELLENCY THE GOVERNOR GENERAL OF INDIA.

Camp Mungowa, the 26th December, 1860.

No. 10 *A.*—The following Extracts from a Military letter from the Right Honorable the Secretary of State for India, No. 397 of the 31st October 1860, respecting the application of the Royal Warrant for the Medical Department of the Indian Army, dated 13th January 1860, are published for general information.

2. The construction you have put upon the term "Service in India," used in the first Clause of the Royal Warrant, in describing the qualifications for promotion to the rank of Surgeon Major, is not strictly in accordance with the intention of Her Majesty's Government. The promotion to this rank of all Surgeons who have been twenty years in the service from date of first admission, will not however be cancelled, but, in future, it must be laid down that no time past out of India, can be reckoned towards the qualification for the rank of Surgeon Major beyond the proportion of furlough which is or may be allowed to reckon as service for retiring pension.

Extract letter No. 174, *dated* 17*th July* 1860, *para.* 2.

"We have promoted to the rank of Surgeon Major, all Surgeons who have been twenty years in the service from date of first admission."

3. For the reasons stated in the 4th and 5th paras. of your despatch, Her Majesty's Government consent to relax the rule in Clause 3, requiring two years Regimental duty as Assistant Surgeons to qualify for promotion to the rank of Surgeons in favor of Assistant Surgeons now near their promotion, who, having been employed on Civil or other duties, have not completed the requisite service. They desire that this rule be carefully observed in future, and that the rule in Clause 3 of the Royal Warrant be observed strictly in the case of all Assistant Surgeons, whose turn for promotion under the old rule may come after two years from the date of publication of this decision in Calcutta.

Extract paras. 4 *and* 5 *of letter No.* 174, *dated* 17*th July* 1860.

"It is pointed out by the Principal Inspector General Medical Department, that there are many Assistant Surgeons whose promotion is close at hand, who have been serving in Extra Regimental posts which have heretofore been considered equivalent to Regimental Service, but who will not come under the provisions of Clause 3 if it be literally acted on, and that there are others who, from the exigencies of the Service, have been employed at Civil stations without having performed the prescribed Military duty, who are in like manner ineligible for promotion.

"In favor of these Mr. Forsyth advocates an exception, and we beg to recommend that the Assistant Surgeons so situated may, notwithstanding their disqualification, be allowed the promotion, but that the rule of the Royal Warrant be enforced strictly in the case of all Assistant Surgeons, whose tenure for promotion may be arrived at in periods beyond two years from the date of publication of the decision of Her Majesty's Government on this reference."

4. The situations named in the margin may, as heretofore, be considered equivalent to Regimental duty for the above purpose.

Assistant Surgeons of General Hospitals.
Assistant Garrison Surgeons.
Medical Storekeepers.
Secretary to Principal Inspector General.
Superintendent of Eye Infirmary.

This General Order is applicable to the three Presidencies.

(Sd.) R. J. H. BIRCH, *Major General,*
Secy. to the Government of India.

FINANCIAL DEPARTMENT.—LIABILITY OF CIVIL SURGEONS TO INCOME TAX.

No. 5, *Fort William, the* 5*th January* 1861.

Summaries of Constructions of Income Tax Acts XXXII. and XXXIX. of 1860.

A Civil Assistant Surgeon, in the receipt of a salary of 300 Rs. per month, having claimed to be exempted from the payment of Income Tax upon 100 Rs. of that sum, on the ground that it was an allowance in lieu of house-rent, within the meaning of Section 129 of Act. XXXII. of 1860, he was informed that, as the monthly sum of 300 Rs. drawn by Assistant Surgeons in medical charge of Civil Stations is treated in the books

Financial Department, Government of India, 27th December 1860. No. 12467, Section.

of Establishments as a "consolidated salary," and as moreover, it is so treated when any such officer is absent on leave, the entire sum was liable to be assessed with duty, and that consequently the claim was inadmissable.

No. 48.
House Rent.
Allowance for, to Public Officers not liable to Income Tax.
Act XXXII of 1860, Section CXXIX.

A question having been raised as to whether the house-rent drawn by an Apothecary and other subordinates of a European General Hospital was liable to be assessed to the Income Tax, it was held that under Section CXXIX, Act XXXII of 1860, all public officers are wholly exempted from the tax on any allowance received by them in lieu of house-rent, and that any duty levied on this account should be refunded. (Financial Department Order, No. 1674, dated 15th February 1861.)

PROVISION OF VEGETABLES FOR EUROPEAN TROOPS.

No. 51 *of* 1861, 15*th February.*—The Governor in Council directs the publication of the following Rules, relative to the supply of vegetables for European troops, founded upon G. O. G. G. 7th September 1860, No. 902.

1. As a first step towards the provision of vegetables, recourse is to be had to the Soldiers' Gardens, it being the desire of Government to give to these gardens every reasonable encouragement.

2. In furtherance of this object, executive Commandant Officers will, in the first week of January of each year, furnish Officers Commanding Stations with a memo. shewing the probable quantity of vegetables that will be daily required for European troops during the ensuing official year.

3. On receipt of this memo. Commanding Officers will ascertain from Officers Commanding European Corps, the extent to which the gardens of their men are likely to furnish the quantity required, the several kinds of vegetables that can be supplied in each month of the year, and the price at which, in their opinion, payment should be made.

To be composed as follows :—
Head Quarter Station.
Deputy Inspector General of Hospitals or Senior Medical Officer.
Executive Commandant Officer.
Out Posts.
A Field Officer or Captain.
An Officer in charge of a Troop or Company.
A Medical Officer.

4. On the above information being obtained, Officers Commanding Stations will assemble Committees to determine the articles that should be taken from the Soldiers' Gardens during each month of the year, and to fix the prices to be paid for each description of vegetables, due consideration being given by the Committee to the interests of the soldier, and to the prices locally prevailing

of the description of articles recommended by the Committee. The quantity of vegetables to be allowed to each man daily is one pound.

5. If it shall appear that the Soldiers' Gardens are capable of supplying only a portion of the vegetables required, or that the gardens cannot be depended on to supply any, Committees will determine what description and quantities of each kind, reported to be obtainable from other sources during each season, should be issued in the several months, and the price which should be allowed.

6. The proceedings of Committees on being closed are to be made over to executive Commandant Officers, who will arrange, for the supply of the articles recommended by Committees, to complete the quantities which the Soldiers' Gardens may be unable to supply.

SYMPTOMS OF AMALGAMATION.

No. 79 *of* 1861, *8th March.*—The following Extract from a Military letter from the Right Honorable the Secretary of State for India, is published :—

Letter dated 4th February 1861, *No.* 17.

1. It has appeared to me desirable, under present circumstances, to offer to Officers of Her Majesty's Indian Military Forces, entitled by length of Service, to claim the full pay pension, some inducement to retire from the Service. I have accordingly resolved in Council, to grant to such officers as may retire in this country before the 1st August next, an addition of £50 per annum to the pensions to which they may be entitled under the regulations of the Service. A notification to this effect has been published in the *London Gazette.*

2. I desire that a similar inducement be made in General Orders at your Presidency, as respects retirements in India, the 1st October 1861 may be fixed as the date limiting the grant of the special allowance.

No. 112 *of* 1861, *26th March.*—With reference to G. O. G. 8th March 1861, No. 79, the Governor in Council directs the publication of the following instructions received by a telegram from the Government of India, "The grant of fifty Pounds a year in addition to pension to those Officers entitled by Service to full pension if they retire by first October next, is not applicable to Medical Officers."

The reasons for the exclusion of medical officers from the extra retiring allowance have not yet been made public. We trust, however, that Government intends giving them an equivalent, in connection with their Annuity, or Retiring Funds, the liabilities of which, we infer, will shortly be undertaken by the State.

OBITUARY NOTICES.

A. N. Magrath, Esq., F.R.C.S., late Director General of the Madras Medical Department.

It is with deep regret that we record the demise of the gentleman who, until lately, occupied the honorable position of head of the Medical Department, in this Presidency. Mr. Magrath died in London on the 27th December 1860, a few weeks after his return from India, at the comparatively early age of 58.

Mr. Magrath entered the service as an Assistant Surgeon in the season of 1823, and had completed 37 years of service. As an Assistant Surgeon, he served with various native corps, and in civil appointments. In 1836, he was appointed Durbar Surgeon to the Rajah of Mysore, which post he continued to hold until 1847, when he proceeded to Europe on sick leave. Returning to India in 1850, he was promoted to be a Superintending Surgeon, which position he occupied in several divisions of the army, until 1856, when he attained the rank of Inspector General of Hospitals, and Junior Member of the Medical Board. The Board was abolished from the 1st January 1858, and Mr. Magrath had the honor of being selected for the new office of Director General from the same date. Failing health, and a strong conviction that the intentions of the late Governor General, in creating a single, responsible, head for the Medical Department in lieu of an irresponsible Board, had not been carried out so as to give him a proper position in relation to the members of his own service, induced him to tender his resignation, and on the 11th July 1859, the date on which Dr. Pearse assumed office, as Director General, Mr. Magrath was permitted to revert to his former position as ex-member of the Medical Board.

We are not aware that Mr. Magrath ever contributed to the literature of his profession. That he kept himself acquainted with the progress of medical and surgical science and took a strong interest therein, to the last, we have every reason to know. As a practical Surgeon, his experience was very great. "The Rajahs Hospital" at Mysore, may be said to have been established by him, and no finer field for operative surgery could be found than the populous capital of the Mysore Province, and it is well known that he availed himself of his position to become a skilful and expert operator. In the administrative grades of the department Mr. Magrath exhibited great tact and judgment. Endowed with much common sense, calm judgment, and clear

perceptions, he was eminently fitted for the multifarious business details, which the high offices he held obliged him to undertake. To his exertions we are mainly indebted for the revival of the establishment of Lock Hospitals in this Presidency, and also for the orders of Government, which clearly define the position and powers of the head of the Medical Department. On the subject of Lock Hospitals, Mr. Magrath held the opinion (which all who have considered the subject must endorse,) that to make them of any permanent use, there must be a legal enactment to institute medical police supervision over the bazaar women of our large towns and military stations; the voluntary system, he thought, would be certain to end in failure.

For some years past Mr. Magrath had been in failing health, and his physical powers, gradually succumbing before the progress of a distressing constitutional malady. Existence had become, at last, almost a burden to him, and it was with no feeling of surprise that his friends in India read the announcement of his death, during the intense cold of the past winter in England.

In private life Mr. Magrath was much esteemed by all who had the privilege of knowing him intimately and well.

Dr. J. Maitland.

We have noticed above the death of the senior member of our Medical Service, and we are now called upon to perform the same melancholy duty, in reference to one comparatively young in the service who, in the inscrutable dispensations of Providence, has been removed from amongst us.

Dr. Maitland died at Coonoor on the 23rd March 1860, aged 41 years. He had been ailing with low fever for some weeks at Trichinopoly, and not progressing to his own satisfaction, went to the Hills on privilege leave, hoping to shake off the debility and febrile symptoms of which he complained. The change was too late however to do him any good, obscure cerebral symptoms present from the first, gradually increased, and it soon became evident to his medical attendants that recovery, humanly speaking, was impossible.

Dr. Maitland had served upwards of 16 years as an Assistant Surgeon, and was some way from the top of the list, at the time of his death.

As a professional attendant he was much beloved by his public and private patients. It was only a few months since that he was selected, by the Principal Inspector General,

solely on professional grounds, for the Medical charge of the 2nd Regt. E. L. I., in which corps a long and useful career of public duty, appeared to lay before him. Writing to an old friend after his arrival at Coonoor, he looked forward hopefully to a return to duty, and felt sure "with God's blessing, that he would be strong enough to go on with his work," little thinking that his work on earth was then finished, and that those who loved and valued him for his many excellent qualities, would soon know his place no more.

RETIREMENTS FROM THE SERVICE.

Since our last issue the following Gentlemen have been permitted to retire on the pensions to which they were entitled by length of Service.

Deputy Inspector General.....E. W. Eyre.
Do. do. .....A. Goodall.
Surgeon Major.....T. White.
Do. .....C. Kevin.
Assistant Surgeon.....W. Traill, M. D.

The slowness of promotion in the Medical Service of this Presidency cannot be better illustrated than by a simple statement of the fact that Dr. Traill, after continuing in it *upwards of eighteen years and a half*, was permitted to retire as an Assistant Surgeon, never having obtained a step in rank, from the day he was admitted upon the establishment.

Subsequent to the order sanctioning his retirement, he obtained back rank as Surgeon, from Nov. 1860.

APPENDIX.

MEDICAL DIRECTORY FOR SOUTHERN INDIA.

For the Half Year commencing 1st April, 1861.

CIVIL DEPARTMENT.

I.

MADRAS MEDICAL COLLEGE.

PRINCIPAL.

James Shaw, Esq., F.R.C.S.

PROFESSORS.

Arranged in order of their permanent appointment.

J. Shaw, Esq., F.R.C.S.....Professor of Midwifery and Diseases of the Eye.
J. E. Mayer, Esq.....Professor of Chemistry.
A. Blacklock, Esq.....Professor of Medicine and Clinical Medicine.
W. J. van-Someren, Esq., M.D.....Actg. Professor of Botany and Materia Medica.
H. B. Montgomery, Esq., A.B., M.D.....Professor of Botany and Materia Medica. *(Europe S. C.)*
J. L. Paul, Esq., A.M., M.D.....Professor of Surgery and Clinical Surgery.
W. N. Chipperfield, Esq.....Professor of Anatomy and Physiology.

ASSISTANTS IN THE SENIOR DEPARTMENT.

Mr. G. Norton.....In Chemical Department.
Mr. R. Wilkins.....Demonstrator of Anatomy and Curator of the Museum.
Mr. J. J. Wood.....In Botany and Materia Medica.
Mr. J. Jobard, Librarian.
M. Juggernad, Native Assistant.

ASSISTANTS IN THE JUNIOR DEPARTMENT.

Mr. R. Barrow.....In Materia Medica, Pharmacy, &c.
Mr. G. Davis.....In Anatomy, Physiology, &c.
Mr. Watkins, English Teacher.

II.

THE UNIVERSITY OF MADRAS.

THE FACULTY OF MEDICINE.

PRESIDENT.

J. Shaw, Esq., F.R.C.S.

MEMBERS.

A. J. Arbuthnot, Esq.
T. Pycroft, Esq.
Col. C. A. Browne.
J. E. Mayer, Esq.
J. Sanderson, Esq.
W. J. van-Someren, Esq., M.D.
Samuel Jesudasen.
W. Maclean, Esq., M.D. *Eur. Furlough.*
G. W. Flynn, Esq., M.D.

III.

CORONER OF MADRAS.

J. Urquhart, Esq., M.D.

DEPUTY CORONER OF MADRAS.

R. S. Mair, Esq., M.D., *Acting Coroner.*

IV.

PORT AND MARINE SURGEON.

H. B. Montgomery, Esq., M.D., *Eur. S. C.*
W. N. Chipperfield, Esq., *Acting.*

V.

CHEMICAL EXAMINER TO GOVERNMENT.

A. J. Scott, Esq., M.D.

VI.

EMIGRATION SURGEON.

W. J. van-Someren, Esq., M.D.

VII.

MADRAS MINT, ASSAY DEPARTMENT.

G. J. Shaw, Esq., M.D., Assay Master.
A. J. Scott, Esq., M.D., Assistant Assay Master.

VIII.

CONSULTING PHYSICIAN MADRAS RAILWAY COMPANY.

J. Sanderson, Esq.

IX.

CONSULTING SURGEON MADRAS IRRIGATION COMPANY.

W. R. Cornish, Esq.

X.

SUPERINTENDENT OF VACCINATION DEPOT.

J. Sanderson, Esq.

XI.

THE MEDICAL REFEREES OF LIFE ASSURANCE SOCIETIES.

The Madras Equitable,.....James Shaw, Esq.
Church of England.....James Shaw, Esq.
The Albert, Medical, and General,.....W. J. van-Someren, Esq., M.D.
Universal.....J. Sanderson, Esq.
Family Endowment.....J. Urquhart, Esq., M.D.
Colonial.....James Shaw, Esq.
Indian Laudable.....———————

XII.

MEDICAL HOSPITALS AND DISPENSARIES, MADRAS.

General Hospital, Black Town Esplanade.	A. Blacklock, Esq., *Physician*. J. L. Paul, Esq., M.D., *Surgeon*. M. A. Doutre, *Apothecary*.
Eye Infirmary, Poonamalee Road.	James Shaw, Esq., *Superintendent*. Mr. T. B. Turnbull, *Apothecary*.
Civil Dispensary, General Hospital Street.	J. L. Paul, Esq., *Surgeon*. Mr. G. Fonsworth, *Apothecary*.
Native Infirmary and Idiot Asylum, Attapalium Road.	W. J. van-Someren, Esq., M.D., *Surg.* Mr. Abel Grove, *Apothecary*.
Leper Hospital, Attapalium Road.	W. J. van-Someren, Esq., M.D., *Surg.* Mr.———— *Apothecary*.
Triplicane Dispensary, Royapettah.	H. W. Porteous, Esq., *Surgeon*. Mr. G. A. Trutwein, *Apothecary*.
Fort Saint George Dispensary, St. Thome Street, Fort.	H. B. Montgomery, Esq., M.D., *Surg. (Eur. S. C.)* W. N. Chipperfield, Esq., *Acting do.* Mr. Dewsnap, *Apothecary*.
Chintadrepettah Dispensary, Chintadrepettah.	J. Sanderson, Esq., *Surgeon*. Mr. D. O'Keefe, *Apothecary*.
Port and Marine Dispensary, Custom House.	H. B. Montgomery, Esq., M.D., *Surgeon. (Eur. S. C.)* W. N. Chipperfield, Esq., *Acting*. Mr. Stirling, *Apothecary*.
Lunatic Asylum, Kilpauk.	J. E. Mayer, Esq., *Surgeon*. S. Mason, Esq., *Resident Medl. Officer*. Mr. Peck, *Apothecary*.
Lying-in-Hospital and Dispensary, Egmore.	W. Aitkin, Esq., M.D., *Superintendent*. Mr. Gorman, *Apothecary*.
Vepery Dispensary, Shoolay.	J. W. Mudge, Esq., M.D., *Surgeon*. Mr. Stephenson, *Apothecary*.
Free Church of Scotland Charitable Institution.	Paterson, Esq., M.D., *Surgeon*. Mr. Hereford, *Apothecary*.
Black Town Dispensary, Saulay Street.	Samuel Jesudasen, Esq., *Surgeon*. ————————, *Apothecary*.

XIV.

MEDICAL OFFICERS OF PUBLIC INSTITUTIONS.

Military Male Orphan Asylum	C. M. Duff, Esq.
Do. Female do. do.	J. W. Mudge, Esq., M.D.
Powder Mills	
Gun Carriage Manufactory	
Civil Male and Female Orphan Asylum.	W. J. van-Someren, Esq., M.D.
H. M. Jail.	
Penitentiary	Wm. Aitken, Esq., M.D.

XV.

PHYSICIANS AND SURGEONS IN MADRAS.

Aitken, Wm., Esq., M.D.	Pantheon Road.
Balfour, E. G., Esq.	Royal Hotel.
Blacklock, A., Esq.	General Hospital.
Chipperfield, W. N., Esq.	Fort Saint George.
Conran, George, Esq., M.D.	Pursewalkum.
Cornish, W. R., Esq.	The Luz.
Duff, C. M., Esq., M.D.	Nungumbaukum.
Flynn, G. W., Esq., M.D.	Mount Road.
Mair, R. S., Esq., M.D.	Poonamalee Road.
Mayer, J. E., Esq.	Rundall's Road.
McKenna, J., Esq., M.D.	Commander-in-Chief's Road.
Montgomery, H. B., Esq., M.D.	*Europe on leave.*
Mudge, J. W., Esq., M.D.	Pursewalkum.
Paul, J. L., Esq., M.D.	General Hospital.
Pearse, G., Esq., M.D.	Crown Hotel.
Porteous, H. W., Esq.,	Mowbray Road.
Sanderson, J., Esq.	Madras Club.
Scott, A. J., Esq., M.D.	Mount Road.
Shaw, G. J., Esq., M.D.	Shawfield, Egmore.
Shaw, J., Esq.	Eye Infirmary, Poonamalee Road.
Urquhart, J., Esq., M.D.	Poonamalee Road.
van-Someren, W. J., Esq., M.D.	Do.

XVI.

DENTISTS.

Clarke, S. G., Esq.	Pantheon Road.
Groves, J. P., Esq.	———

XVII.

CHEMISTS AND DRUGGISTS.

Barrie and Co.	Vepery Dispensary, Poonamalee Road.
Do. (Branch).	16, Mount Road.
Breithaupt, Robert.	Semboodoos Street.
DeBeaux and Co.	Esplanade.
Flynn, G. W. and Co.	135, Mount Road, Presy. Dispy. (late Govt. Dispy.)
Geils, Donald.	Popham's Broadway.
Lee and Co.	10, Do. do.
LeFebour.	Do. do.
Scott and Co.	Do. do.

MILITARY DEPARTMENT.

In the following pages the Titles of the Medical Officers of the Madras Army are thus indicated.

1 F.R.C.S., England.	6 L.R.C.S., Ireland.	11 L.A.C.
2 F.R.C.S., Edinburgh.	7 M.D.	12 L.M.
3 F.R.C.S., Ireland.	8 M.B.	13 Fac. Phy. Sur. Glas.
4 M.R.C.S., London.	9 F.R.C.P.	14 F.G.S.
5 L.R.C.S., Edinburgh.	10 M.R.C.P.	15 Grad. Med. and Surg. Madras Medical College.

† A.B. †† A.M. ††† F.L.S.

* prefixed to an Officer's name indicates the possession of a Medal for War Service.

Nominal List of Medical Officers of Her Majesty's Indian Forces on the Establishment under the Presidency of Fort St. George, showing their Professional Titles, dates of Rank, and how employed.

No.	Names.	Professional Titles.	Date of Rank as Asst. Surgeon.	Date of Rank as Surgeon.	Date of Rank as Inspector General.	Nominal Service to 31st March 1861. Y.	M.	D.	Corps or Department.	Station.
Inspectors General of Hospitals.										
1	George Pearse	7	10th Feb. 1824	25th Mar. 1837	11th July 1859	37	1	18	Prin. Insp. Genl. Medl. Dept.	Madras.
2	*Duncan Macpherson	7	18th May 1836	11th Dec. 1852	8th Jan. 1858	24	10	13		
Deputy Inspectors General of Hospitals.										
	*John Templeman Maule	5	14th May 1825	25th May 1838	Depy. Inspector General. 18th Feb. 1851	35	10	17	Nagpore Force	Kamptee.
	Robert Cole	4	8th do 1827	24th Sept. 1840	14th do 1854	33	10	23	Hyd. Sub. Force	Secunderabad.
5	Henry Gibbon Graham		3rd June	2nd Feb. 1841	8th June 1855	33	9	27	Pegu Division	Rangoon.
	Frederick Cooper	4-11	4th Aug.	17th Dec.	12th Feb. 1956	33	1	27	Northern Div.	Europe s. c.
	John McKenna	7	20th May.	31st do	20th Oct. 1857	32	10	11	Presidency and Centre Div.	Madras.

List of Medical Officers of Her Majesty's Indian Forces—*(Continued.)*

No.	Names.	Professional Titles.	Date of Rank as Asst. Surgeon.	Surgeon.	Depy. Inspector General.	Nominal Service to 31st March 1861. Y.	M.	D.	Corps or Department.	Station.
	Cornelius Clarke Linton...	4-12	9th Mar. 1829	29th Feb. 1844	15th April 1858	32	0	22	Mysore.....	Bangalore.
	*Wil. Gordon Davidson....	††-5	1st April	22nd April	7th May	32	0	0	South Div.....	Trichinopoly.
10	John Lovell.....	4	30th Aug.	3rd June 1845	11th July 1859	31	7	1	Ceded Districts.	Bellary.
	John Forbes.....	10-4-12	24th do	28th Feb. 1847	.....	30	7	17	Act. North Div.	Vizagapatam.

Surgeons Major.

					Surgeon Major.					
	*Henry Goodall.....	4	24th Aug. 1830	28th Feb. 1847	13th Jany. 1860	30	7	17	25th Regt. N. I.	Mercara.
	Charles Irving Smith.....	10-4-11	15th May	29th do 1848	do	29	10	16	38th do	Vizagapatam.
	Colin Paterson	7	22nd Oct.	2nd June 1849	do	29	5	9	Garrison Surgn.	Bangalore.
15	John Colin Campbell.	5-4	15th Nov.	9th Aug.	do	29	4	15	Durbar Surgn...	Mysore--*Europe Fur. 6 months.*
	*James Dorward.....	.....	12th Feb. 1832	31st do	do	29	1	16	Garrison Surgn.	Trichinopoly.
	John Emelius Mayer.	4	26th Mar. 1833	28th Feb. 1850	do	28	0	5	Medical Store-keeper & Prof. of Chemistry.	Presidency.
	James Shaw	1	19th May 1834	31st Jany. 1851	do	26	10	12	Supt. Eye Infy.	Madras.
	Robert Henry Rennick....	4	21st Decr.	13th Feb.	do	26	3	10	27th Regt. N. I.	Cuddapah.
20	*William Mackenzie, C.B...	††-7	14th Jany. 1835	5th do	do	26	2	17	Hyd. Contgt.....	Mominabad.
	*John Middlemass.....	5	1st June	6th Jany. 1852	do	25	10	0	3rd Regt. L. C..	Bellary.
	*Thomas Caverhill Jerdon.	4	11th Sept.	29th Feb.	do	25	6	19	11th Regt. N. I.	Thayetmyoo.
	Alexander Lorimer.....	7-5	6th Feb. 1836	3rd Aug.	do	25	1	22	....	Europe s. c.
	Edward Green Balfour.....	5-4	2nd June	31st Dec.	do	24	9	28	Govt. Agent at Chepauk.....	Madras.
25	James Sanderson.....	5	27th Oct.	15th Mar. 1853	do	24	5	5	Garrison Surgn.	Madras.
	*John Henry Orr, C.B.....	.....	22nd Feb. 1837	17th July	do	24	0	7	Hyd. Contgt.....	Hyderabad.
	*John Andrew Reynolds...	4	28th do	24th Nov.	do	24	0	0	Garrison Surgn.	Cannanore.
	William George Prichard..	7-12-5	4th April	15th Dec.	do	23	11	26	Staff Surgeon...	Rangoon.

	*Joseph Myres Jackson...	4	2nd June	1st Jany. 1854	do	23	9	28	Acting Garrison Surgeon.....	Bellary.
30	*Char. Geo. Edwin Ford,..	1-12	29th Aug.	8th do	do	23	7	3	1st Bn. Arty....	St. Thomas' Mt.
	*Donald MacFarlane.....	7-9	11th Jany. 1838	14th Feb.	do	23	2	20	4th do	Secunderabad.
	Henry William Porteous..	5	10th Feb.	24th do	do	23	1	18	Surg. 4th Dist..	Madras.
	John Kennedy.....	7-5	27th Mar.	29th Oct.	do	23	0	4	2nd Bn. Arty...	Kamptee.
	David Thomas Morton.....	4	7th do	29th do	do	23	0	4	37th Grenadiers.	Europe s. c.
35	*Wil. Campbell Maclean...	7	29th April	9th Dec.	do	22	11	2	Surgn. 3rd Dist.	Europe Fur.
	John Borlase Stevens.....	4-11	29th do	1st Jany. 1855	do	22	11	2	3rd Regt. L. I...	Cannanore.
	*Char. William Pickering	4-11	21st Aug.	21st do	do	22	7	10	3rd M. E. Regt.	Jaulnah.
	*Henry Edward Hadwen..	4	26th Jany. 1839	16th Mar.	do	22	2	6	35th Regt. N. I.	Bellary.
	Benjamin Smith Chimmo.	4-12-11	29th Mar.	10th April	do	22	0	22	.....	Europe s. c.
40	James Cecil Burton.....	7-5	14th May	26th July	do	21	10	17	.....	Europe Fur.
	*Charles Timmins.....	1-4-11	1st Sept.	10th Feb. 1856	do	21	6	29	Artillery	Thayetmyoo.
	Henry Smith.....	4-12	12th do	12th do	do	21	6	18	48th Regt. N. I.	Bangalore.
	Edward Samuel Tribe.....	4	26th Oct.	30th Mar.	do	21	5	6	.....	Europe s. c.
	Charles Barclay.....	.....	3rd Decr.	27th April	do	21	3	28	18th Regt. N. I.	Cannanore.
45	Moses Rogers.....	4-11	3rd do	16th May	do	21	3	28	Horse Brigade...	Bangalore.
	Charles David Currie.....	7-5	3rd Jany. 1840	28th Aug.	do	21	2	28	.....	Europe s. c.
	James Lancaster Ranking..	4	6th do	18th Sept.	do	21	2	25	2nd Regt. E. L. I.	Trichinopoly.
	*Wil. Raymond Gingell †..	.....	6th do	1st Oct.	do	21	2	25	Consular Dept..	China.
	James Peterkin.....	7-4-11	6th do	28th Feb. 1857	do	21	2	25	16th Regt. N. I.	Europe s. c.
50	John Pringle.....	7-5-12	6th do	18th do	do	21	2	25	1st Madras Fus.	Bangalore.
	*William Johnston.....	7-5-4	6th do	28th Aug.	do	21	2	25	.....	Europe s. c.
	Ambrose Blacklock	5	8th Feb.	1st Dec.	8th Feb. 1860	21	1	20	Phy. Gl. Hospl.	Madras.
	*John William Mudge.....	7-5	8th Mar.	25th Feb. 1858	8th Mar.	21	0	23	Surgn. 2d Dist..	Presidency.
	Thos. William Whitelock..	.....	10th do	14th Mar.	10th do	21	0	21	.....	Europe Fur.
55	*William Wilson Rawes...	.....	14th April	29th June	14th April	20	11	26	4th Regt. L. C.	Kamptee.
	*John Andrew Horak.....	7-5	6th Sept.	23rd July	6th Sept.	20	6	24	12th Regt. N. I.	Masulipatam.
	James Mackintosh	.....	22nd Dec.	5th Aug.	22nd Dec.	20	3	10	.....	Europe s. c.

† Has applied for permission to retire from the Service from 29th October 1860.

List of Medical Officers of Her Majesty's Indian Forces—*(Continued.)*

No.	Names.	Professional Titles.	Date of Rank as Asst. Surgeon.	Date of Rank as Surgeon.	Nominal Service to 31st March 1861. Y.	M.	D.	Corps or Department.	Station.
	Regimental and Staff Surgeons.								
	John FitzPatrick	7-1-10-12	29th Dec.	2nd Jany. 1859	20	3	3	d. d. 1st Regt. L. C.,	Bangalore.
	William Scott	7-5	30th Jany. 1841	9th April.	20	2	2	31st Regiment L. I...	Moulmein.
60	*William Hewitt Seton Burn...	4-12	17th Feb.	5th May	20	1	11	1st do N. I...	Bangalore.
	*John Kinlock Ogilvie..	7	17th do	10th Aug.	20	1	11	30th do N. I..	Bellary.
	*Alexander Charles MacLeod..	4	8th Mar.	26th Oct.	20	0	28	47th do	Europe s. c.
	Robert Rushbrook Sutleffe..	4	8th do	19th Nov.	20	0	28	.....	do
	James Ratton	4-11	2nd April	30th do	19	11	28	36th do	Kurnool.
65	*William Forester		1st May	30th do	19	11	0	.....	
	Henry James Penny	1	3rd Oct.	30th do	19	5	28	d. d. 47th Regt N. I.	Secunderabad.
	Charles Murray Duff	7-5-12	4th Jany. 1842	2nd Jany. 1860	19	2	27	Acting Surg. 3d Dist.	Presidency.
	Henry Young	4	8th do	19th Feb.	19	2	23	6th Regt. N. I.....	French Books.
	Henry Thomas Webster Harper.	4	30th do	1st Mar.	19	2	2	41st do ...	Arcot.
70	Christopher Beadnell Craske....	4-11	15th Feb.	2nd Sept	19	1	0	10th do	Secunderabad.
	James Kirkpatrick	7-5	30th April	28th Dec.	18	11	1	Surg. to Commission.	Mysore.
	*Henry Carnegie	4	19th June	1st Jany. 1861	18	9	11	26th Regt. N. I.....	Kamptee.
	Robert Pilkington Linton....	4-12-11	2nd Aug.	8th Feb.	18	7	29	34th do C. L. I....	Madras.
	Hugh Francis Clarke Cleghorn.	7	10th do	21st do	18	7	20	Conservator of Forests	Europe s. c.
75	Matthew Kane	† †-7-12	20th do	1st March	18	7	11	Dy. Assay Master ...	Bombay.
	*George Mackay	7-10-5-12	28th Dec.	1st do ...	18	3	4	23rd Regt. W. L. I....	Palaveram.

Staff and Regimental Assistant Surgeons.

				No. and Rank in this grade.					
	Alexander Hunter	7-2-12	2nd Feb. 1843	1st Class	1	18	1	26	Supt. of the School of Arts, Madras.
	Hamlin Nott	4-10	12th do	do		18	1	16	50th Regt. N. I., Bangalore.
	Frederick Fletcher	5-12	4th April	do		17	11	26	Eur. on Fur.
80	James Hay Blackwell	5-12	27th Jany. 1844	do		17	2	5	49th Regt. N. I., Secunderabad.
	Andrew James Scott	7-5-12	1st March	do		17	1	0	Asst. Assay Master, Madras.
	William Wentworth Heude	7-5-12	25th do	do		17	0	7	Civil Surgeon, Nagpore.
	John Colebrook	4-11	1st April	do		17	0	0	Neilgherries s. c.
	William Williamson	5	16th do	do		16	11	14	Resy. Surgeon, Penang.
85	George Smith	7-5	3rd Aug.	do		16	7	28	Residency Surgeon, Hyderabad. *(Eur. S. C.)*
	Walter Alexander Leslie	4-11	11th Feb.	do	10	16	1	17	Medical Officer, Coonoor.
	Frederick Lewis Clementson	4	20th Aug.	do		15	7	11	Zillah Surgeon, Tinnevelly.
	John Brett	7-†-†-11-12	12th Sept.	do		15	6	18	14th Regiment N. I. Bangalore.
	William Aitken	7-5-12	26th Jany. 1846	do		15	2	5	Supt. Lying-in-Hospl. Madras.
90	*Patrick Gerald FitzGerald	7-12-3	20th March	do		15	0	11	Sr. Staff Asst. Surg. Palaveram,
	William Judson vanSomeren	7-5-12	7th April	do		14	11	23	Surgeon 1st District
	James Boyd Fleming	7-5	17th do	do		14	11	13	Supt. Jail Nuldroog, Hyderabad. Actg. Resy. Surgn.
	*Duncan Mackenzie	5	5th May	do		14	10	26	Europe s. c.
	*George Baillie	7	19th do	do		14	10	22	19th Regt. N I., Secunderabad.
95	Edward Dixon	4	3rd June	do		14	9	27	29th do, Kamptee.
	James Cowpar	5-12	20th Jany. 1848	do	20	13	2	11	Civil Asst. Surgeon, Singapore.
	Arthur Langford Trewman Cooke	4	9th March	do		13	0	22	4th Regt. N. I., Madras.
	*Lestock Wilson Stewart	4	28th May	do		12	10	4	Medical Officer, Ootacamund.
	John Robert Theobalds	4	20th Dec.	do		12	3	12	9th Regiment N. I., Jaulnah.
100	George Flower Trimnell	4-4	27th do	do		12	3	5	1st do, Hoosingabad.
	James Donaldson	7-5	20th Feb. 1849	do		12	1	18	46th do, Vizianagrum.
	Charles James Rogers	4	29th April	do		11	11	10	Medical Officer, Ootacamund.
	*Edward John Waring	4-12	22nd June	do		11	9	8	Phy. to H. H. the Rajah of Travancore, Trevandrum.

List of Medical Officers of Her Majesty's Indian Forces—*(Continued.)*

No.	Names.	Professional Titles.	Date of Rank as Asst. Surgeon.	No. in Rank.	Nominal Service to 31st March 1861. Y.	M.	D.	Corps or Department.	Station.
	*George Whittaker Walter	4-12	12th Oct. 1849	1st Class. ...	11	5	19	Asst. Supt. Port Blair.	Europe s. c.
105	John Liston Paul	7-5-† †	20th Jany. 1850	do ...	11	2	11	Surgn. General Hospital	Madras.
	John George Gibbs	4-12	do	do 30 ...	11	2	11	15th Regt. N. I.	Trichinopoly.
	Henry Rowley Donaldson Marrett	4	16th Feb.	do ...	11	1	12	Zillah Surgeon	Salem. *(Eur. S.C.)*
	John Wilson	4-11	9th March	do ...	11	0	12	Civil Assistant Surgeon	Jubbulpore.
	William Augustus Jacob	7-12-4	20th do	do ...	11	0	11		Europe s. c.
110	John Miller	7-5-12	8th July	do ...	10	8	23		Europe s. c.
	John Chisholm	7-5	14th Aug.	do ...	10	7	27	47th Regt. N. I.	Secunderabad.
	Henry Robert Oswald	7-5-12	24th do	do ...	10	7	8	Commissioner Mysore	Shemoga.
	*John Thomas Williams	4	20th Dec.	2nd Class. ...	10	3	11		Europe s. c.
	Alexander Adam Renton	7-9-5-12	20th Jany. 1851	do ...	10	2	11	Civil Surgeon	Coimbatore.
115	*John Anderson Cox.	7-4	10th Feb.	do ...	10	1	18		Europe s. c.
	*James Edward Dickinson	4-11	10th Sept.	do 40 ...	9	6	20	Civil Surgeon	Rangoon.
	*Colvin Smith	7-5	3rd Nov.	do ...	9	4	27		Europe s. c.
	*Edward D'Arcy Evezard	4	27th Jany. 1852	do ...	9	2	5	Zillah Surgeon	Masulipatam.
	*Francis Day	4-† † †	26th Feb.	do ...	9	1	3	Civil Surgeon	Cochin.
120	Charles Lee	4	11th Sept.	do ...	8	6	19	H. M. S. Ship Coromandel	
	*Howard B. Montgomery	7-6-†-8	20th Oct.	do ...	8	5	10	Garrison Assistant Surg.	Eur. s. c.
	Joseph Marcus Joseph	7-9-10-4	20th Nov.	do ...	8	4	10	Civil Surgeon	Tranquebar.
	Edward Somerset Cleveland	7-4-11	do	do ...	8	4	10	Civil Surg. Malabar.	Calicut.
	William Henry Harris	4-11	13th Feb. 1853	do ...	8	1	0	Kistnah Anicut	Bezwarrah.
125	*William Henry Rean	7-4	14th May	do ..	7	10	27	Civil Surgeon	Chicacole.
	Henry Thompson Shaw	4	10th Sept.	do 50 ...	7	6	20	Jr. Staff Assistant Surgeon	Palaveram.

	*Alfred Sanderson...	7-4		20th Oct.		do			7	5	10	1st Regt. Cavy. Hyd. Contgt.	Bolarum.
	Clarence Cooper	7-4-12-11		20th Nov.		do			7	4	10	Arty. & Details	Labuan.
	James McDonald	5-12		14th Feb.	1854	do			7	1	14		Europe s. c.
130	*Samuel Jardine Wyndowe	4-7		24th March		do			7	0	7	Nagpore Irregular Cavalry	Seetabuldee.
	William Robert Cornish	4-12		1st April		do			7	0	0	Secy. Prin. Inspector General Medical Department	Madras.
	John Simm Morton	7-5		10th June		do			6	9	20	B Troop H. A.	Jaulnah.
	Arden Hulme Beaman	4		do		do			6	9	20	Civil Surgeon	Rajahmundry.
	Joseph Alfred Bean	7-4-11		do		do			6	9	20	Actg. Civil Surgeon	Mangalore.
135	John Pearson Nash	7-4-12		20th do		do			6	9	10		Europe s. c.
	*Henry Critchley Brodrick	7-4-11		2nd Sept.		do	60		6	6	28	Residency Surgeon	Indore.
	George Stewart Watson Ogg	8-5-††		12th do		do			6	6	18	44th Regt. N. I.	Madras.
	John Shortt	7-4-12		20th do		do			6	6	10	Civil Surg.	Chingleput.
	Donald Coleman McAllum	7-5-12		30th Dec.		do			6	3	2	1st Regt. Infy. H. C.	Aurungabad.
140	William Nathan Chipperfield	4-11		3rd Jany.	1855	do			6	2	28	Acting Garrison Assistant Surgeon	Fort St. George.
	William Pearl	4-11		24th do		do			6	2	8	Arty. Horse & Foot	Bellary.
	George Marr	7-5		do		do			6	2	8	Civil Surgeon	Moulmein.
	*William Doyle	3		do		do			6	2	8	do	Combaconum.
	Edmund Eyre Lloyd	4		do		do			6	2	8	do	Cocanada.
145	*Thomas Lowe	4-11-12		do		do			6	2	8	Acting Civil Surg.	Salem.
	*Henry Webster	4-11-12		do		do	70		6	2	8	Civil Asst. Surgeon	Seonee—Eur. s. c.
	James Augustus Foy	4-12		do		do			6	2	8	Ganjam and Orissa Sebundies	Russelcondah.
	*David Alexander Forbes	5-12		31st do		do			6	2	1	Zillah Surgeon	Honore.
	*Michael Cudmore Furnell	4		7th Feb.		do			6	1	21	do	Tellicherry.
150	*George Alexander Burn	7-5-12		30th May		do			5	10	2	Hyd. Contingent	Hingolie.
	Thomas Croudace	4-11		4th Aug.		do			5	7	27	Civil Surgeon	Guntoor.
	Henry Joseph Herschel Griesbach	7-4-12-11		do		do			5	7	27	24th Regiment N. I.	Masulipatam.
	Benjamin Hooke	4		do		do			5	7	27	Details & Civil Estab.	Tavoy.
	Robert Dempster	4-12		do		do			5	7	25	29th Regt. N. I.	Trichinopoly.
155	John Houston	7-5		do		do			5	7	25	Asst. Gar. Surg.	Bangalore.
	*Henry Elmsley Busteed	4		do		do	80		5	7	27	Civil Surgeon	Cuddalore.

List of Medical Officers of Her Majesty's Indian Forces—*(Continued.)*

No.	Names.	Professional Titles.	Date of Rank as Asst. Surgeon.	No. in Rank.	Nominal Service to 31st March 1861. Y.	M.	D.	Corps or Department.	Station.
	Henry Crocker	7-12-4	do	2nd Class.	5	7	27	Civil Surgeon	Chittoor.
	Richard Arnold	4-11	do	do	5	7	27	Eur. Inf. Depot	Arcot.
	*Hunter Adam	5	do	do	5	7	27	Zillah Surgeon	Nellore.
160	*William Henry Morgan	4	do	do	5	7	27	17th Regt. N. I.	Palamcotta.
	Josiah Dashwood Gillies	7-4-12	7th Nov.	do	5	4	23	d. d. 13th Regt. N. I.	Trichinopoly.
	Dugald Campbell	7-5-12	21st do	do	5	4	9	51st Regt. N. I.	Mangalore.
	Henry King	†-8-12	11th Jany. 1856	do	5	2	20	Civil Asst. Surg.	Baitool.
	Benjamin Williamson	8-5	30th do	do	5	2	2	Hyd. Contingent	Lingasagoor.
165	James Thomas Fraser	8-4-11	20th Feby.	do	5	1	18	5th Regt. N. I	Berhampore.
	*George Bidie	8-4-12	do	do 90	5	1	18	Cattle Farm	Hoonsoor.
	John Groscort Reed	7-4	do	do	5	1	18	Hyd. Contingent	Hingolee.
	John Henderson	7	do	do	5	1	18	33rd Regt. N. I.	Thayet Myoo.
	Hamilton McEilheron Ross	7-4-12	do	do	5	1	18	Resy. Surgeon	Travancore.
170	Charles Thick Eves	4-11	do	do	5	1	18	Hyd. Contingent	Aurungabad.
	James Sadlier Ridings	4	do	do	5	1	18	20th Regt. N. I.	Penang.
	James Joseph Heffernan	6	do	do	5	1	18	2nd do	Tonghoo.
	David William Trimnell	4-11	do	do	5	1	18	Civil Surgeon	Nursingpoor.
	Charles Abdy Andrews	4	25th April	do	4	11	6	Zillah Surgeon	Vizagapatam.
175	John McNeale Donnelly	7	3rd July	do	4	8	28	Station	Mergui.
	James Keess	8-10-4-12	4th Aug.	do 100	4	7	27	52nd Regt. N. I.	Rangoon.
	*Robert Wilson	7-13-11	do	do	4	7	27	Civil Surgeon	Madura.
	Robert William Cockerill	4-12-11	do	do	4	7	27	37th Regt. Grs.	Vizianagrum.
	*Charles Robertson	7	do	do	4	7	27	42nd Regt. N. I.	Burmah.
180	*William Charles Elliot	7-5	do	do	4	7	27	7th Regt. N. I.	Kamptee.
	Alexander Gamach	7-5	do	do	4	7	27	Civil. Asst. Surg. Port Blair	Andaman Islands.
	Jacob Wilkins	7-4	do	do	4	7	27	24th Regt. N. I.	Samulcottah.
	*Alexander Boggs	4-12	29th Oct.	do	4	5	2	Hyd. Contingent	Ellichpore.
	*Thomas Gwynne Howell	4	12th Nov.	do	4	4	18	Zillah Surgeon	Cuddapah.

185	*James Ross	8-5	.....	29th Jany. 1857	do	...	4	2	3	.....	Europe s. c.
	*Samuel Thomas Heard	7-5-12	.....	do	do	110 ...	4	2	3	F Troop H. A.	Bangalore.
	*William Arnold Smith	7-4	.....	do	do	...	4	2	3	d. d. 16th Regt. N. I.	Hurryhur.
	*William Frederick deFabeck	4	.....	do	do	...	4	2	3	Civil Surgeon	Kurnool.
	*George Edward Whitton	8-6-12-†	.....	do	do	...	4	2	3	C Troop H. A.	Bangalore.
190	*Thomas Beaumont	7-6	.....	do	do	...	4	2	3	In Medical charge 3rd Regt. Cent. India Horse	Goonah.
	*William Pierce Kelly	6	.....	9th June	do	...	3	9	21	45th Regt. N. I.	Quilon.
	William Richard Grylls	7-4-12	.....	4th Aug.	do	...	3	7	27	Actg. Civil Surgeon.	Seeone.
	*James Thomas Doyle	3	.....	10th Dec.	do	...	3	3	21	32nd Regt. N. I.	Burmah.
	Henry John Beach	4-11	.....	27th Jany. 1858	do	...	3	2	5	.....	
195	*John Massey Miller	5-7	.....	13th April	do	...	2	11	17	d. d. Artillery	Tonghoo.
	William Farquhar	7-5	.....	28th May	do	120 ...	2	10	4	40th Regt. N. I.	Singapore.
	*John Law	7-4-11	.....	do	do	...	2	10	9	.....	
	George Hamilton Alexander	7-5-12	.....	do	do	...	2	10	4	.....	
	Walter Fry	4	.....	29th June	do	...	2	9	1	d. d. 21st do	China.
200	William John Busteed	5-12	.....	23rd July	do	...	2	8	9	.....	Europe s. c.
	William Farquhar Davis	7-4-12-11	.....	do	do	..	2	8	9	.....	Europe s. c.
	Samuel Rule	7-4	.....	do	do	...	2	8	9	Actg. Zillah Surgn.	Tellicherry.
	James McDonald Houston	7-4	.....	do	do	...	2	8	9	Medl. Charge Engineer Department	Ramandroog.
	James Welsh	4-12	.....	do	do	...	2	8	9	.....	Europe s. c.
205	William Howland Roberts	7-14	.....	do	do	..	2	8	9	Department of Dy. Insp. Genl. Nag. Force	Kamptee.
	John Murray	7-5-12	.....	do	do	130 ...	2	8	9	.....	Europe s. c.
	John Bilderbeck	15-4-12	.....	10th Feby. 1859	do	...	2	1	18	Artillery	Cannanore.
	Peter William Marriott	4-11	.....	do	do	...	2	1	18	1st Madras Fusiliers.	Bangalore.
	Robert Edmund Pearse	4	.....	do	do	...	2	1	18	.....	Europe s. c.
210	George Dalziel Riddell	5	.....	do	do	...	2	1	18	d. d. 3rd M. Eur. Rt.	Jaulnah.
	Æneas McLeod Ross	5	.....	do	do	...	2	1	18	d. d. Pegu Division.	Burmah.
	Joseph Dougall	5-12	.....	do	do	...	2	1	18	Artillery	Vizagapatam.
	Benjamin Thomas Suffrein	4-12-11	.....	27th July	do	..	1	8	5	Pegu Divison	
	Joseph Francis Barter	5-12	.....	do	do	...	1	8	5	Under Dy. Insp. General	Nagpore.
215	John FitzGerald	6	.....	do	do	...	1	8	5	1st Batt. Artillery	Mount.

List of Medical Officers of Her Majesty's Indian Forces—*(Continued.)*

No.	Names.	Professional Titles.	Date of Rank as Regimental.	Date of Rank as No. in Rank.	Nominal Service to 31st March 1861. Y.	M.	D.	Corps or Department.	Station.
	Andrew Fergusson	7-5	27th July 1859	2nd Class 140	1	8	5	.....	Secunderabad.
	Hugh Griffith	4-12-11	do	do ...	1	8	5	d. d. 2nd E. L. I.	Trichinopoly.
	Spencer Meredith	4	do	do ...	1	8	5	.....	Europe s. c.
	Francis Thomas Bayntun	4	26th Oct.	do ...	1	8	5	4th Batt. Artillery	Secunderabad.
220	George Williamson	7-5	20th Jany. 1860	do ...	1	5	5	d. d. 1st B. A.	Mount.
	Charles Robert Geo. Parker		do	do ...	1	2	12	Under Dept. Inspr. Genl. Centre Divin.	
	Hugh Ronaldson Handyside		do	do ...	.....			1st Mad. Fusiliers	Bangalore.
	Daniel Kearney		do	do ...	.....			d. d. Artillery	Rangoon.
	Francis Orde Bigg Wither	4-11	25th do	do ..	.....			d. d. 4th Bn. Arty.	Secunderabad.
225	——			do ...					
	——			do 150 ...					
	——			do ...					
	——			do ...					
	——			do ...					
230	——			do ...					
	——			do ...					
	——			do ...					
	——			do ..					
	——			do ...					
235	——			do ...					
	——			do 160 ...					
237	——			do 161 ...					

List of Medical Officers of Her Majesty's British Forces.

No.	Names.	Professional Titles.	Date of Commission.		Service to 30th July 1861.	Corps or Department.	Station.
			Regimental.	Army.			
	Deputy Inspector General of H. M. Hospitals.						
1	George S. Beatson	M.D	.....	31st Dec. 1858	.....	.....	Bangalore Hd. Qrs.
	Staff and Regimental Surgeons.						
	Charles Bush Hearn	.....	16th Nov. 1849	.....	.....	1st Royal Regt.	Secunderabad.
	Alexander Barclay	M.D	13th April 1852	.....	.....	43rd Regiment	Fort St. George.
	Thomas Best	.....	23rd do 1859	13th April 1852	.....	68th do	Rangoon.
5	Huntley George Gordon	M.D	22nd do 1853	.....	.....	69th do	Tonghoo.
	James Macbeth	M.D	13th Dec.	12th Aug. 1853	.....	74th Highlanders	Bellary.
	Miah William Murphy	.....	3rd March 1854	.....	.....	91st Regiment	Kamptee.
	William Holmes Jephson	M.D	12th Jan. 1855	.....	.....	1st Drag. Guards	Bangalore.
	T. Crawford	M.D	9th Feb.	.....	.....	18th Royal Irish	Secunderabad.
10	G. Waterloo Pennington Sparrow	.....	6th July	.....	.....	60th Rifles	Wellington.
	James Kellie	M.D	2nd Oct. 1857	.....	.....	17th Lancers	Secunderabad.
	William Sim Murray	M.B	24th June 1859	.....	.....	66th Regiment	Cannanore.
	Staff and Regimental Assistant Surgeons.						
	William Hemphill	M.D	13th July 1858	14th July 1854	.....	60th Rifles	On leave to Europe
	David Collen	M.D	13th Nov. 1860	1st Sept	.....	17th Lancers	Secunderabad.
15	Robert Watson	.....	26th May	.....	.....	91st Regiment	Kamptee.
	John Wild Hulseberg	.....	14th Decr.	.....	.....	1st Royal Regiment	Secunderabad.
	J. Watts	.....	.....	5th April 1855	.....	1st Drag. Guards	Not joined.
	Richard Uniacke Cashman	M.D	9th Jany. 1857	18th May	.....	Royal Artillery	Secunderabad.
	Samuel Fraser	.....	12th Oct. 1860	23rd July	.....	17th Lancers	Not joined.
20	S. Fuller	.....	.....	do	.....	do	Secunderabad.
	Clement Williams	.....	5th Jany. 1855	.....	.....	68th Regiment	Rangoon.
	James Robert Crawford	.....	2nd April	.....	.....	96th do	Tonghoo.

List of Medical Officers of Her Majesty's British Forces—*(Continued.)*

No.	Names.	Professional Titles.	Date of Commission. Regimental.	Date of Commission. Army.	Service to 30th July 1861.	Corps or Department.	Station.
	William Robert Burkitt	.....	17th April 1855	.....	.....	74th Highlanders ...	Under orders to join from Banglore.
	James Macartney	.....	6th Oct.	.....	.....	60th Rifles ...	Wellington.
25	John James Henry	.....	28th Aug. 1857	18th Jany. 1856	.....	43rd Regiment ...	Depot Surg. Poona.
	Edward L. McSheehy	M.D....	14th do	27th May	.....	1st Drag. Guards ...	Bangalore. [mallee.
	Arthur Chester	.....	13th July 1858	1st Aug. 1857	.....	74th Highlanders ...	Bellary.
	Francis Madden	.....	13th do 1857	19th Oct.	.....	69th Regiment ...	Tonghoo.
	James Good	.....	3rd Nov.	30th do	.....	43rd do ...	Fort St. George.
30	John Henderson Whittaker....	.....	6th do	do	.....	69th do ...	Tonghoo.
	Seth Sam	.....	12th Mar. 1859	9th Nov.	.....	60th Rifles ..	Welllington.
	Frederick Ffolliott	.....	1st Aug. 1857	.....	.....	18th Royal Irish ...	Secunderabad abst.
	William S. Oliver	M.D.....	15th Sept.	.....	.....	60th Rifles ...	Not joined [on duty
	Augustus Oliver Applin	.....	3rd Oct.	.....	.....	68th Regiment ...	Rangoon.
35	T. T. Gardiner	.....	10th July 1860	7th May 1858	.....	1st Royal Regt. ...	Secunderabad.
	John Henry Halked Tothill.....	.....	13th June 1859	22nd June	.....	18th Royal Irish ...	do
	Hugh M. Macbeth	.....	7th Sept. 1858	22nd do	.....	91st Regiment ...	Kamptee.
	Robert Gillespie	M.D.....	31st Dec.	1st Sept.	.....	74th Highlanders ...	Bellary.
	Mathew Lawrence White	.....	1st June 1859	22nd do	.....	1st Royal Regt. ...	Secunderabad.
40	James M'Creevey	M.D.....	31st Dec. 1858	.....	.....	66th Regiment ...	Cannanore.
	John Trebane May Symons.....	.....	31st do	.....	.....	Royal Artillery ...	Secunderabad.
	A. C. McTavish	.....	.....	12th Jan. 1859	.....	60th Rifles ...	Wellington.
	R. A. P. Grant	.....	26th Oct. 1860	13th June	.....	43rd Regiment ...	Fort St. George.
	C. Codrington	.....	28th do	do	.....	68th do ...	Rangoon.
45	J. MacLean Marshall	.....	13th June 1859	.....	.....	91st do ...	Abst. on sick leave.
	George Alexander Moorhead...	.....	5th Aug.	.....	.....	66th do ...	In Medl. Ch. Det. Malliapooram.
	William Orr	.....	4th do 1860	.....	.....	18th Royal Irish ...	En route to join.
	N. Avent	.....	16th Nov.	.....	.....	1st Drag. Guards ...	Bangalore.
49	W. Traill	M.D	19th do	.....	.....	43rd Regiment ...	Fort St. George.

List of Veterinary Officers of Her Majesty's Indian Forces.

Number.	Names.	Date of Commissions.	Corps or Stations.	Remarks.
	VETNY. SURGNS., 10.			
1	Ed. Boghurst Dawson...	28 June 1845	Rt. Depot, Oossoor	
	Thomas Arnold	26 Dec. 1846	4th Light Cavalry	
	*Thomas Aston	4 Dec.	.....	Europe s. c.
	Rowland Hill Usher-wood Holloway	26 do. 1850	2d Light Cavalry	
5	James Thacker	29 do.	Horse Artillery....	
	Thomas Pritchard.....	2 Oct.	Body Guard.....	
	Daniel Cullimore	27 Dec. 1853	3d Light Cavalry.	
	Frederick George Shaw.	6 Feb. 1857	7th do. ...	Doing duty Horse Artillery
9	George Western..	25 April.	5th do. ...	

Veterinary Officers of Her Majesty's British Forces.

1	Thomas John Williamson	5th Mar. 1855	Royal Artillery ...	Secunderabad.
	J. W. Callow	14th Dec. 1857	do ...	do
3	John Ferrier	17th July 1859	17th Lancers ...	do

Native Surgeons.

No.	Names.	Date of Rank.	Stations, &c.
1	C. Bauloo.	16 April 1852	Zilla of Trichinopoly.
	S. Jesudasen	do	Black Town—Madras.
	S. B. Kanagaroyen	20 May 1856	Pullachy Civil Dispensary.
	P. S. Mootoosawmy Moodlr.	do	Zilla of Combaconum.
5	Francis Appavoo	4 do 1857	Assistant Conservator of Forests.
	Moodeen Sheriff	5 do 1858	Civil Dispensary, Triplicane.
	M. Iyasawmy	do	do Cuddapah.
	I. Raujantheram	do	do Cuddapah.
	T. Ruthnum	do	do Nellore.
10	Y. Anthony.	do	do Madura.
11	R. N. Manikum	12 do 1859	do Salem.

List of Medical Warrant Officers of Her Majesty's Indian Forces.

	APOTHECARIES, 45.			
1	Arthur Harris ...	4 Feb.	1831	d. d. Artillery Rangoon.
	George Haldwell ...	2 June.	1832	Garrison of Bangalore.
	Samuel Mason ..	27 August	1833	Resident Medical Officer of the Lunatic Asylum.
	Henry Xavier ...	19 June	1836	Under the Comssr. in Mysore.
5	*P. A.* Mark Sterling ...	7 Feb.	1840	Port and Marine Surgeon's Dept.
	do David Scot Turner ...	2 Sept.	1842	Garrison of Vizagapatam.
	do *Gustin Wilson ...	1 Nov.		Secunderabad.

P. A. signifies passed examination as Apothecary.

List of Medical Warrant Officers of H. M.'s Indian Forces--*(Continued.)*

No.	Names.	Date of Rank.	Stations, &c.
	APOTHECARIES.		
	P. A. Thomas Good ...	6 Feb. 1844	Attached to the Commissioner, Tenasserim Provinces.
	do *George Smith ...	27 May 1845	Garrison of Cannanore.—Bangalore s. c. to 31st Decr. 1860.
10	*do* Bartholomew Woutersz	24 Feb. 1848	Under the Comssr. in Mysore.
	do Amond Doutre ...	24 Sept.	General Hospital, Presidency.
	do John Mathews ...	12 June 1849	Under the Coltr. and Magistrate, Chingleput.
	do Anthony Ronchett ...	8 Jan. 1850	Garrison of Bellary.
	do Robert Thompson ...	15 March	Kotagherry.
15	*do* Thomas King ...	24 Dec.	Under the Comssr. in Nagpore.
	do Joseph North ...	25 July 1851	Coltr's. Establishment, Bellary.
	do Henry William King...	1 Nov.	Medical Stores, Presidency.
	do *Peter McIntyre ...	9 May 1845	Dept. of Depy. Inspector General of Hospitals, Malabar & Canara.
	do David Conwell ...	17 Nov.	d. d. Dept. of Depy. Insp. Genl. of Hospitals, Pegue Division.
20	*do* T. M. Francke ...	21 do	Cantonment of Kamptee
	do John Yaull ...	22 do	Itchapore. Madras s. c. till 30th June 1861.
	do *George Fonsworth ...	do	d. d. Civil Dispy. Genl. Hospl.
	do William Barnes ...	22 May 1855	Mysore Commission.
	do Samuel Jones ...	15 June	Penitentiary, Madras
25	*do* *Robert Huffton ...	28 Nov.	Doing duty Female Asylum.
	do William Dickins ...	28 Jan. 1856	Dept. of Depy. Inspr. General of Hospitals, Mysore Division.
	do Robert Watson ...	31 do	Civil employ, Singapore.
	do John Alcock ...	15 July	Medical Stores, Rangoon.
	do *John Charlesworth ...	21 Oct.	Civil Establishment, Sircy.
30	*do* George Dewsnap ...	15 May 1857	Garrison of Fort St. George.
	do George Wrightman ...	17 do	Under the Comssr. Mysore.
	do John Aitkins ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Ceded Districts.
	do John William Clark ...	27 April 1858	d. d. Civil Dispy., Raneepett.
	do Abel Grove ..	do	Native Infirmary.
35	*do* Frederick Huntley ...	9 July	Bangalore c. s.
	do George Macqueen ...	....	Acting 31st Dec. 1858—Employed in the Nagpore Igr. Force.
	do Benjamin Henry Bond.	25 Feb. 1859	Garrison of Trichinopoly.
	do John Cunningham ...	29 March	d. d. Government House.
	do Joseph Swaris ...	16 Sept.	d. d. Dept. Depy. Inspr. Genl. of Hospitals, Northern Divn.—doing duty Masulipatam.
40	*do* Christopher Oliver ...	20 do	Dept. of Depy. Inspr. General of Hospitals, Presy.
	Daniel Gillespie† ...	12 Oct.	Dept. of Depy. Inspr. General of Hospitals, Hyderabad Subsidiary Force.
	do John Davall ...	14 Feb. 1860	66th Regiment of Foot.

P. A. signifies passed examination as Apothecary.

† Supernumerary.

List of Medical Warrant Officers of H. M.'s Indian Forces—*(Continued.)*

No.	Names.	Date of Rank.	Stations, &c.
	APOTHECARIES.		
	P. A. *John Tyrrell ...	15 May 1857	66th Regiment of Foot.
	do *Archibald Spiers ...	13 June	d. d. Dept. of Depy. Inspr. Genl. of Hospitals, Presy.
45	*do* J. A. Rodgers ...	19 Dec. 1860	d. d. Itchapore.
46	*do* A. Jacob ...	12 Jany. 1861	d. d. Hospital at Trimulgherry, Secunderabad.
	2ND APOTHECARIES, 52.		
1	*P. A.* Charles Evers ...	17th July 1857	Doing duty at Oossoor.
	do *Richard Barrow ...	25 August	Asst Jr. Dept. of the Medl. College.
	do Richard Quintin ...	do	3rd Madras European Regt.
	do Thomas B. Turnbull.	do	Doing duty Eye Infirmary.
5	*P. S. A.* Charles Doig. ...	do	H. M. 17th Lancers.
	do George Honor ...	do	H. M. 1st King's Dragoon Guards.
	P. A. *Henry C. Clarke....	do	Dept. of Depy. Inspr. General of Hospitals, Presy. Divn. d. d. at Labuan.
	P. S. A. Frederick Pearl.....	do	69th Regiment of Foot.
	do George Pereira ...	do	d. d. 1st Battalion Artillery.
10	Joseph Miller ...	do	3rd Battalion Artillery.
	James Westwood ...	do	Madras and Vellore furlough till 31st October 1860.
	James Smith.	do	
	do *George O'Hara. ...	do	H. M. 60th Regt. of Foot.
	Henry W. Hillier....	do	Cuddalore s. c. 6 months from 2nd Sept. 1860.
15	*George Norton ...	do	Medical College.
	do Thomas Horrox ...	do	2nd European L. I.
	*Edmund White ...	do	H. M. 1st Royal Regt. of Foot.
	John Lloyd ...	do	d d. Cantonment of Arcot.
	*James White ...	do	d. d. Artillery at Rangoon.
20	William Miles ...	do	Ganjam Survey Party.
	Thomas Leonard ...	do	H. M. 91st Regt.
	Samuel Newnan ...	do	Arcot, Chittoor and Palaveram for 6 months from 26th July 1860.
	James Hoyle ...	do	d. d. Civil duties at Negapatam.
	*Samuel B. Kemp ¶.	do	
25	John Gorman ...	do	Lying-in-Hospital, Madras.
	do William Leach ...	do	68th Regiment of Foot.
	Henry W. Martin ..	do	Doing duty Ramandroog.
	Thomas Buggy ...	27 do	Ganjam Survey Party.
	John Martin ...	9 April 1858	d. d. Seaman's Hospital and Civil Dispensary, Cocanada.
30	*do* Wm. K. Kierulf ...	27 do 1859	2nd Battalion Artillery.
	do Henry H. Lynsdale..	do	d. d. Medical Stores, Presidency.
	do Patrick J. Finley ...	9 July	1st Battalion Artillery.
	Michael Kinsley ...	10 August	Madras and Neilgherries s. c. till 31st December 1860.

P. A. signifies passed examination as Apothecary.
P. S. A. signifies passed examination as Second Apothecary.
¶ Under orders of the Supreme Govt. for employment with European Corps in Bengal.

List of Medical Warrant Officers of H. M.'s Indian Forces—*(Continued.)*

No.	Names.	Date of Rank.	Stations, &c.
	2nd APOTHECARIES.		
	P. S. A. Lazarus Dyce ...	31 Dec. 1859	H. M. 74th (Highlanders) Regt. of Foot.
35	Anthony D'Rozario .	4 Jan.	H. M.'s 43rd Regiment.
	do Francis Meneaud ...	25 Feb.	d. d. 1st Madras Fusiliers.
	do James West ...	29 March	H. M. 66th Regiment.
	Patrick Heron† ...	17 June	H. M. 18th Royal Irish.
39	John Edwin Ross† ..	12 October	Depôt of Poonamallee.
	ASST. APOTHECARIES, 197		
1	*George Drake ...	20 June 1845	d. d. Dept. of Depy. Inspr. Genl. of Hospitals, Southern Divn.
	P. S. A. William Barren ...	19 Dec.	d. d. Civil Dispensary, Ranepett. Madras and Bangalore s.c, till 15th May 1861.
	do *James Hargreaves...	17 March 1846	Station Hospital, Malacca.
	do *William Powell ..	28 do	Kimedy.
5	Wm. Douglas Master	22 Aug. 1845	Undergoing sentence of imprisonment in H. M.'s Grand Jail for 2 years.
	do *Daniel Henry Gray.	23 April 1846	Royacottah.
	do Henry Wale ...	15 June	H. M. 43rd (Lt. Infy.) Regt. of Foot.
	do Henry Callaghan ...	30 July	d. d. Rev. Sett. Party. Manantoddy.
	do *R. F. Stephenson...	11 August	Dispensary 2nd District.
10	*Francis Bormel Pereira	29 Oct.	Doing duty H.M. 18th Royal Irish.
	John Middleton ...	11 Nov.	d. d. Dept. of Depy. Inspr. Genl. of Hospitals, Ceded Districts.
	*John Asiaticus Hill Wahab ...	21 Sept. 1847	d. d. Dept. of Depy. Insp. Genl. of Hospitals, Nagpore Force.
	do John Harris ...	30 Oct.	Madras and Eastern Coast s. c. till 30th April 1861.
	T. Humphreys Carr.	19 Dec.	In charge of the Civil Station and Dispy. at Raepore.
15	*Alphonso White ...	2 Feb. 1848	S. C. 15 months from 17th April 1860.
	do W. Lindsay Crawford	29 do	1st Madras Fusiliers.
	do *Thomas Richard Peck	do	Lunatic Asylum.
	do John W. McKenzie.	do	3rd Madras European Regiment.
	W. T. Chillingsworth..	28 March	H. M. King's Dragoon Guards.
20	*do* *George Davis ...	29 July	d. d. Assistant Junior Department of the Medical College.
	James Thomas ...	18 August	Artillery, Penang.
	Abraham Saviel ...	24 Sept.	Doing duty at Tanjore.
	*John Joseph Wood ...	2 Oct.	Asst. to Professor of Botany and Materia Medica in the Medical College.
	Henry Hitchcock ...	11 do	d. d, Trichore.

P. S. A. signifies passed examination as Second Apothecary.
† Supernumeraries.

List of Medical Warrant Officers of H. M.'s Indian Forces—*(Continued.)*

No.	Names.	Date of Rank.	Stations, &c.
	ASST. APOTHECARIES.		
25	*Robert Donaldson ...	26 Dec. 1848	d. d. Pensioners, Cuddalore.
	Samuel Sausman ...	6 March 1849	Mergui.
	Joseph O'Keeffe ...	3 May	2nd Battalion Artillery.
	Henry Godbier ...	12 June	Male Asylum.
	James Lears ...	14 Sept.	d. d. Sebundies at Palcondah.
30	John Bornshin ...	8 Jany. 1850	H. M. 69th Regt. of Foot.
	George Anthony Trutwein ...	15 March	Triplicane Dispensary.
	John Alexander Beckett ...	26 do	Dept. of Depy. Inspr. Genl. of Hosptls., Malabar, Canara, Bangalore, Vellore and East Coast, s. c. till 15th Oct. 1861.
	*William Lewis ...	17 June	Dept. of Depy. Inspr. Genl. of Hospitals, Nagpore Force.
	*Samuel Hall ...	2 July	Public Cattle Depot, Hoonsoor.
35	*Austin Ince ...	29 do	A Troop Horse Artillery.
	*Michael Netscher ...	6 August	Dept. of Depy. Inspr. Genl. of Hospitals, Pegue Division.
	*Laurence Carthy ...	9 Sept.	Andaman Islands, with local rank of 2nd Apothecary.
	*David Stewart ...	27 do	M. H. 74th Highlanders.
	George Bamford ...	24 Dec.	d. d. Artillery, Moulmein.
40	Charles Robertson ...	22 April 1851	Dept. of Depy. Inspr. Genl. of Hospitals, Northern Division.
	George Nicholls ...	22 May	Garrison of Bellary.
	*Thomas Quinn ...	25 July	Garrison of Vizagapatam.
	Robert Alexander Leonard....	14 Nov.	H. M. 68th Regiment of Foot.
	Henry O'Flaherty ...	5 June 1852	Andaman Islands, with local rank of 2nd Apothecary.
45	Henry Crawford ...	do	d. d. Dept. of Depy. Inspr. Genl. of Hospitals, Pegue Division.
	Charles James Daly ...	do	B Troop Horse Artillery.
	Richard Wilkins ...	do	Demonstrator of Anatomy and Curator of the Museum at the Medical College.
	* Henry Hackett ...	29 do	d. d. Dept. of Depy. Insp. Genl. of Hospitals Pegue division.
	Peter Anderson ...	21 August	Gooty.
50	*J. Howard, M.D., & M.R.C.S., [Eng.]	27 do	Medical charge of the Zillah of Ganjam.
	*Joseph Sausman ...	27 do	Andaman Islands, with local rank of 2nd Apothecary.
	*Willam Thomas ...	1 Oct.	H. M. 91st Regiment of Foot.
	Charles Smith ...	10 Dec.	3rd Battalion Artillery.
	John Ringrow ...	17 Oct.	Andaman Islands, with local rank of 2nd Apothecary.
55	Thomas Joseph Riely ...	do	Doing duty Dept. of Depy. Inspector Genl. of Hospitals, Hyderabad Subsidiary Force.
	John Wayne ...	31 May 1853	4th Battalion Artillery.
	William Osman ...	7 July	d. d. Battery Royal Artillery, China.

List of Medical Warrant Officers of H. M.'s Indian Forces—*(Continued.)*

No.	Names.	Date of Rank.	Corps, Stations, &c.
	ASST. APOTHECARIES.		
	Charle Pettigrew ...	7 July 1853	Garrison of Bangalore.
	James Karney ...	do	d. d. Native Infantry Depot, Palaveram.
60	Samuel Wells ...	3 May 1854	N. Infy. Depot, Palaveram.—Sea, on s. c. for 12 months, from 13th September 1860.
	Daniel Truth O'Keeffe ...	do	Chintadrapet Dispensary.
	*George Frederick Carpenter.	do	47th Regt. N. I.
	Patrick Kinsley ...	do	European Seamen's Hospital, Singapore.
	Ambrose D'Roza ...	do	Civil Hospital, Moulmein.
65	William James Lincoln ...	do	Dept. of Dy. Insp. Genl. of Hospitals, Presy.
	Samuel Arnold ...	do	Convalescent Depot, Jackatalla.
	George Watson ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Mysore Division.
	Joseph Hackett ...	do	2nd European Light Infy.
	Walter Hugh Yarde ...	9 do	Under the orders of the Officer Comdg. Pegue Division at Menghie.
70	John Walker ...	30 do	Dept. of Depy. Inspr. Genl. of Hospitals, Ceded Districts.
	Thomas Conquest ...	3 August 1855	Tavoy.
	Robert Harvey ...	April	Genl. Hospital.
	Caleb St. John Lawrence. ...	do	Garrison of Cannanore.
	Thomas George Eade ...	do	Province Wellesley.
75	John James Henry Everard...	do	Cantonment of Secunderabad.
	George Christopher Brown...	do	Pauper Hospital, Singapore.
	Francis Henry Horatio Smith.	do	Depot Poonamallee.
	Miles Craggs ...	do	Cantonment of Kamptee.
	Fred. Agtus. Adolphus Vint.	do	Garrison of Trichinopoly.
80	Francis Edward. Smith ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Pegue Division.
	Robert Stewart ..	10 July	Dett. N. I. Labuan
	Edward Samuel Mayley ...	28 do	6th Regt. Light Cavalry.
	Joseph Victor Duckworth ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Ceded Districts.
	John J. Leonard Wheatley ...	do	1st Regiment Light Cavalry.
85	Anthony Lawrence Xavier ...	do	Andaman Islands, with local rank of 2nd Apothecary.
	Charles D'Santos ...	21 May 1856	H Troop of Royal Horse Arty.
	Robert Henry Legge ...	do	d. d. Dept. of Depy. Inspr. Genl. of Hospitals, Hyderabad Subsidiary Force.
	John Hardaker ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Northern Division.
	Paul George Paul ...	do	Senior Surgeon's Dept. Tenasserim Provinces.
90	John Edward Lillywhite ...	do	d. d. Dept. of Depy. Inspector General Hospitals, Presidency.
	Thomas Cripps ...	do	19th Regiment Native Infantry.

List of Medical Warrant Officers of H. M.'s Indian Forces—*(Continued.)*

No.	Names.	Date of Rank.	Corps, Stations, &c.
	ASST. APOTHECARIES.		
	David Augustus Philips ...	3 Sept. 1855	Dept. of Depy. Inspr. Genl. of Hospitals, Malabar and Canara —d. d. Detachment 8th N. I., Pootoor.
	John Green ...	5 May 1857	H. M. 1st (Royal) Regt. of Foot.
	William Karney ...	do	Sappers and Miners.
95	Henry Stagges ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Pegue Division.
	Thomas Ward ...	do	17th Regiment N. I.
	George Wilkie ...	do	Dept. of Depy Inspr. Genl. of Hospitals, Pegue Division.
	Easton Alfred Morris ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Ceded Districts.
	Henry Joseph Scott ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Presy.
100	George Shunker ...	do	21st Regiment N. I.
	Samuel Johnston ...	do	Body Guard.
	Leonard Walter Lincoln ...	do	39th Regiment N. I.
	* Joseph Peter D'Silva ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Southern Divn.— Doing duty C Company 2nd Battalion Artillery.
	* John Sausman ...	16 do	Garrison of Vellore.
105	James Joseph O'Flynn ...	do	25th Regiment N. I.
	Henry Boon ...	do	4th do
	Richard Gaggs Wright ...	21 do 1856	12th do
	James Albert Falloon ...	16 do 1857	Dept. of Depy. Inspr. Genl. of Hospitals, Northern Division.
	James Walker ...	do	26th Native Infantry.
110	* William Hamilton ...	3 August	Doing duty Dept. of Depy. Inspector Genl. of Hospitals, Pegue Division.
	William Gilbert Wright ...	do	7th Regiment N. I.
	William Joseph Gray ...	do	2nd Regiment L. C.
	Edmond O. Claudius Vint ...	do	36th Regiment N. I.
	James McFarland ...	do	48th do
115	*John Robert Carey ...	do	8th do
	John Arthur Evers ...	do	Doing duty Triplicane Dispensary.
	Thomas Everard ...	do	European Arty. Veteran Company.
	*Thomas Gabriel Devine ...	do	51st Regiment N. I.
	Richard James Ramsbottom...	do	35th do
120	James Hugh McClosky ...	do	Detachment Labuan N. Infy.
	George Watson ...	do	Ootacamund.
	William Watson ...	do	H. M. 66th Regt of Foot, Detachment at Malliapooram.
	John Felix James Borgonha...	do	Station Hospital, Singapore.
	Edward James Heiden ...	do	d. d. Depy. Inspr. Genl. of Hospitals Northern Divn.
125	James George Ashworth ...	do	With Fane's Horse China.
	Thomas Tudor Van Hams ...	do	33rd Regiment N. I.
	James Ringrow ...	25 do	Dept. of Depy. Inspr. Genl. of Hospitals, Malabar and Canara.

List of Medical Warrant Officers of H. M.'s Indian Forces—*(Continued.)*

No.	NAMES.	Date of Rank.	Corps, Stations, &c.
	ASST. APOTHECARIES.		
	John Isacke ..	25 August 1857	1st Battalion Artillery.
	Daniel Callaghan ...	1 October	24th Regiment N. I.
130	John Norman ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Pegue Division.
	Edwin Atkinson ...	do	17th Lancers.
	Alfred Wright ...	do	C. Troop Horse Artillery.
	James John Warts ...	do	5th Regiment N. I.
	Benjamin Lewis Xavier ...	do	46th do
135	Thomas Kelly Hall ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Pegue Division.
	Charles Thipthorp ...	do	d. d. with working parties at Dumugudium.
	Henry Cunningham ...	do	Doing duty H. M. 3rd Battalion 60th (Rifles) Regiment of Foot.
	Thomas Roberts ...	do	30th Regiment N. I.
	Augustus Craver Thompson...	do	Doing duty European Infantry Veteran Compy.—With Rajahmundry Sebundies.
140	Nicholas D'Rozario ...	do	50th Regiment N. I.
	Thomas V. S. Aitkins ...	do	d. d. Troop Horse Artillery.
	David Marian ...	10 Nov.	d. d. 1st Regt. N. I. Madras s. c. for 8 months from 3rd Jany, 1861.
	Francis Brown ...	19 Jany. 1858	Doing duty Company Royal Artillery, Secunderabad.
	Alexander Trutwein ...	1 June	27th Regiment N. I.
145	Christian Thomas Browne ...	24 August	2nd do
	George Marrow ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Pegue Divison.
	Thomas Edwin Judge ...	do	F Troop Horse Artillery.
	James Wood ...	do	d. d. 7th Light Cavalry.
	George Stuart ...	do	15th Regiment N. I.
150	James Henry Lincoln ...	do	14th do
	*Charles William Baker ...	do	16th do
	Christian Michael Antonio ...	do	Cuddalore and Eastern Coast till 30th April 1861.
	*George Bayley ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Pegue Division.
	Richard Alexander Bowie ...	do	5th Batn. Arty.—Madras and St. Thomas's Mount s. c. till 30th November 1860.
155	Reuben John Anderson ...	do	3rd Regiment N. I.
	Richard Wells ...	do	Doing duty 20th Regt. N. I.
	James Theodore Gilles ...	do	10th Regiment do
	Michael Wade ...	do	38th do
	*George William Phillips ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Southern Division—Doing duty Paumbem.
160	Jonas Isaac Laffrey ...	do	42nd Regt. N. I. Madras s. c. till 30th September 1861.
	George Edwin King ...	do	43rd Regiment N. I.
	William Day Stewart ...	9 Nov.	d. d. on board Steamer "*Coromandel.*"

List of Medical Warrant Officers of H. M.'s Indian Forces—*(Continued.)*

No.	Names.	Date of Rank.	Corps, Stations, &c.
	ASST. APOTHECARIES.		
	Edwin Gustavus Scott ...	24 Dec. 1858	29th Regiment N. I.
	Francis D'Sylva ...	1 Feb. 1859	13th do
165	Jonathan Chadwick ...	do	41st do
	John Croker ...	9 July	Madras & Cuddapah for 3 months.
	Thomas Baracliffe ...	20 do 1860	Collector's Dept. Vizagapatam.
	Theophilus Todd ...	5 May	3rd Regiment L. C.
	James Delany Jones ...	do	34th do L. I.
170	Joseph Johnson ...	do	28th do N. I.
	John Edwin Xavier ...	do	31st do L. I.
	Edmund Trutwein ...	do	22nd do N. I.
	Charles Trutwein ...	do	44th do N. I.
	Edward Gillson ...	do	4th do L. C.
175	Charles Jordon ..	do	23rd do L. I.
	Stephen Chalke ...	do	52nd do N. I.
	Alfred James Butterfield ...	do	49th do N. I.
	John McDiarmid ...	do	32nd do N. I.
	James Anderson ..	do	9th do N. I.
180	George John Duckworth ...	do	18th do N. I.
	George Albert Watts ...	do	6th do N. I.
	Richard Hamilton ..	do	Dept. of Depy. Inspr. Genl. of Hospitals, Hyd. Sub. Force.
	William Johnston ...	do	45th Regiment N. I.
	Henry Wells ..	do	Pegue Police Battalion.
185	David Arkle ...	29 June	49th Regiment N. I.
	Thos. Mergler ...	3 August	22nd do
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